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REPORT

OF THE

DIRECTOR-GENERAL OF FORESTS

FOR THE YEAR ENDED

31 MARCH 1977

Presented to the House of Representatives
Pursuant to Section 68 of the Forests Act 1949

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THE DIRECTOR-GENERAL OF FORESTS
to the Hon. V. S. Young, Minister of Forests
Wellington, 10 June 1977.

SIR,

I have the honour to present, pursuant to section 68 of the Forests Act 1949, the annual report of the operations of the New Zealand Forest Service for the year ended 31 March 1977.

M. J. CONWAY, Director-General of Forests.

Hon. V. S. Young,
Minister of Forests,
Wellington.

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FOREST POLICY AND HIGHLIGHTS

FOREST LEGISLATION

One of the major recommendations of the 1974–75 Forestry Development Conference was that the Forests Act 1949 should be amended to give the Forest Service statutory authority to manage State forests in a manner which more clearly reflected current public opinion. This was done by way of the Forests Amendment Act 1976, which prescribes the balanced use of State forest land and gives greater recognition to the protection of indigenous flora and fauna and to recreational use of forests.

In a move to liberalise access to publicly owned land a new category has been introduced—"open indigenous State forest". The amendment also provides for the setting apart of "wilderness" areas of State forest where resource development of any kind is prohibited. It further requires that the public, as well as other Government agencies, have the opportunity to comment on proposals to establish wilderness areas and forest sanctuaries.

Greater public involvement in forest planning and management has also been catered for in other ways. The Minister of Forests may now make public any management plan or proposals leading to such a plan. This provision has already been made use of, for example by the Forest Service publishing management alternatives for the forests of western Southland and inviting comment before any particular option is chosen. Again, public consultation on the future of West Coast forests and forest industries will be ensured by a seminar planned for June 1977, at which all information held by the Forest Service and other Government departments will be made available. This will include a land use study carried out jointly by a team from the Forest Service and the Department of Lands and Survey in respect of lands of the Crown in south Westland, recommendations of the Scientific Co-ordinating Committee on Beech Research on desirable reserves, and the overseas consultants' report on industrial opportunities in the beech forest project areas, as well as for the exotic forests of Nelson and Marlborough. Invitations to participate will be extended to a wide range of interested parties, including representatives of forest industry, environmental groups and agencies, and local authorities. No firm management plans will be put forward, but alternative courses of action will be explored and submissions on the management and utilisation of these extensive forests will be invited after the seminar.

The 1976 amendment also makes provision for wider consultation on the management of State forest parks, now numbering 15 and embracing nearly 1.2 million hectares. Hitherto, advisory committees were able to advise only on the recreational aspects of park administration but their powers have now been widened to include management as a whole. Moreover, draft management plans, prepared initially by Forest Service staff and examined by advisory committees, have to be published and public comment invited and considered before the Minister of Forests approves the final plans. This procedure has already been followed in the case of the Kaimai–Mamaku and Catlins Forest Parks and will be complied with for the more recently created parks and when existing plans for older parks are due for revision.

INDIGENOUS FOREST POLICY

The revised policy for indigenous State forests, put forward by the Forest Service late in 1974 and adopted with minor amendments by the Forestry Development Council, was approved by the previous Government in 1975. The principles of the policy have since been confirmed by the present Government, which noted, however, that its implementation must take into account its effect on a long-standing industry and those engaged in it. This is undoubtedly true and despite the need to have regard for social considerations and to introduce gradually those changes in resource allocation and forest management practices for this reason, substantial progress can be recorded. Clear felling of high-quality indigenous forest and conversion to exotic forests has been slowed down, if not terminated, in many areas, with partial felling being substituted in order to meet contractual commitments entered into many years ago, when clear felling was more acceptable than it is today.

In the coming year it is likely that the State forest area logged in one way or another will be approximately 7000 hectares, with 60 percent managed as indigenous forest and 40 percent ultimately converted to exotic species. This conversion programme is dominated by a lease arrangement entered into in the Bay of Plenty by direction of the Government 9 years ago, and by the need to provide a substitute wood resource on the West Coast as indigenous supplies diminish.

The policy also requires that a multi-disciplinary panel of scientists be established to advise on the reservation of indigenous forest for scientific purposes. While the Scientific Co-ordinating Committee for Beech Research has been heavily committed in examining the provisional reserves in the West Coast and Southland beech project areas, its scope has now been enlarged to report on desirable reserves in south Westland and in State forest elsewhere, notably in the King Country - west Taupo group of forests. In all cases the committee's recommendations will be considered along with other factors when land use decisions are ultimately made.

Where resources are unlikely to be sufficient for one reason or another to meet commitments, renegotiation of contracts provides a possible solution, with substitution of exotic species the most likely avenue. However, freedom of action along these lines is limited as exotic resources within a reasonable distance are in short supply or are too young.

Indigenous timber has been unrealistically priced for over 50 years but it now appears that more and more people are prepared to do without this hidden subsidy in the name of conservation. The Forest Service has long advocated decontrol of timber prices to bring forest produce into line with those farm products where the domestic price is governed by that obtained from export. With a view to allowing market forces to determine the wholesale prices of indigenous sawn timber, thereby encouraging the maximum recovery of the more valuable grades and a more discriminating consumer approach to their use, representations were made by the department during the year for the pricing of indigenous timber to be removed from all forms of control. However, in view of constraints on other sectors of the economy, the Government declined the recommendation but left the door open for increased

prices while retaining price control. The Forest Service will therefore be submitting a case to the Department of Trade and Industry for a marked increase in the existing margin between finishing and lower grades. If approved, these higher prices for higher grades will go some way towards providing the incentive needed for better use of quality timbers. Higher stumpages would follow and offset some of the higher costs incurred and the income forgone by implementing the overall policy.

One of the aims of the revised forest policy is to reduce the level of cut from State forests. In 1974–75 wood removals (peeler logs, saw logs, pulp logs, and smallwood) totalled 606 000 m^3 but fell to 530 000 m^3 in 1975–76, a drop of 13 percent. Provisional figures for 1976–77 indicate a further decline of 18 percent to 433 000 m^3, and this progressive reduction can be attributed in part to the new policy. Slightly more indigenous timber was sawn in 1975–76, compared with the previous year. A 4 percent decrease from State forest was offset by an 11 percent increase from Maori, private, and Crown leasehold land, due mainly to more tawa being produced from land clearing operations. Final figures for 1976–77 are not yet to hand but quarterly returns show a distinct reduction for all tenures during the remainder of 1976.

ENERGY USE IN FOREST INDUSTRIES

Accepting that the world's resources of fossil fuels will become strictly limited in the foreseeable future and significant cost increases could be pending, the need to pay close attention to the use of energy is all too evident. There is also a need to examine critically the likely future requirements of the various sectors of the economy, particularly the industrial.

The 1974–75 Forestry Development Conference recognised many constraints on expanded afforestation programmes and associated industrial developments; these included the availability of land, water, labour, capital, and energy. Since that time a great deal of attention has been focused on the way energy is used by the forest based industries, both in forest management and in wood processing. Energy usage varies considerably in type and quantity with different forest industries, with lowest requirements in the log export trade, modest use in sawmilling and panel production, and highest consumption in much of the pulp and paper field. With future expansions in wood production being increasingly for exports rather than a set range of products for domestic consumption, the product mix from our future forests may well be influenced by the energy costs inherent in following various marketing options.

In looking at future options there are many relevant considerations. For example while mechanical pulp mills have high electrical energy demands, they produce a high yield of pulp per unit volume of wood used. They are normally associated with the use of softwoods and can operate on relatively small wood requirements (upwards of some 170 000 m^3 a year) which, with full use of forest and sawmill residues, can be obtained in regions with relatively modest forest resources. They involve much lower capital costs both in total and per tonne of product than other forms of pulping and they are more environmentally acceptable in respect of air and water pollution. Added to this, certain mass-produced papers such as newsprint can be made from thermo-mechanical pulp

alone. Chemical pulp mills, while requiring much larger concentrations of wood supplies (usually not less than 850 000 m^3 a year) with attendant land use implications, nevertheless produce a high quality and high priced pulp from both softwood and hardwood species and use much less electricity per tonne of product. This is because the yield of chemical pulp is less than half of that for mechanical pulp and the substances removed from the wood in cooking with chemicals are burnt to provide the heat required and aid recovery of the chemicals.

Some perspective on energy usage by the forestry sector (covering forest growing, harvesting, transporting, and wood processing) may be gained from the share it draws from the common pool of energy resources available in New Zealand to both industrial and domestic consumers. For 1974 this was put at some 7 percent*. In terms of individual energy sources the forestry sector used 6 percent of the available oil, 4 percent of gas, 6 percent of coal, and 9 percent of electricity. Should New Zealand develop a larger and wider industrial base, as exists in many other countries, these percentages could of course become lower.

An especially important feature of the wood-based industry is its ability to contribute part of its own energy requirements through the burning of wood and bark wastes, and additionally of black liquor in chemical pulp mills. In this way it is able to generate energy from its own renewable raw material resource. Estimates made on behalf of the New Zealand Energy Research Development Committee show that approximately one-third of the industry's gross usage of energy in 1974 was self provided. This internal production of energy has been steadily increasing. These changes have resulted not only from improved industrial efficiency in the greater use of residues but also from changing patterns in basic energy costs. There is still room for more efficient firing of wood fuels, for increased recycling of heat energy, and for better housekeeping to avoid waste of energy in any of its forms. Even internationally as sources of energy become more costly, the energy intensive drying of pulp for export, followed by reslushing and drying again in papermaking in the importing country, must favour undertaking pulp and paper production in the one plant as far as possible and preferably in the country producing the raw wood material.

The forestry sector is highly adaptable and therefore able to meet constraints which may arise in the future supply of energy. This can be said because of the flexibility possible in growing crops for export as logs or manufactured products, and the range of options available in processing which affect the level of energy used. If justification is needed to use domestic or imported energy it can be added that production forestry has emerged as a major earner of overseas exchange.

WOOD AS A SOURCE OF ENERGY

In the current debate over the impending energy crisis most attention has been directed to the nuclear issue and the development of further indigenous sources of energy, notably geothermal, coal, natural gas, wind, and solar. Little mention has been made of wood, the oldest form

*Footnote: According to N.Z. Energy Research Development Committee Report No. 13, 1976, Table 3.8, the draw-off by the forestry sector in 1974 was 17 153 terajoules and from the *New Zealand Official Yearbook* 1976, p. 519, the total available supply in 1974 was 257 200 terajoules.

of fuel and one on which so many of mankind are still dependent. (Approximately half of the wood produced from forests of the world is still used for domestic heating and cooking.)

However, over the last few years some attention has been given to the use of wood. During the year the Department of Scientific and Industrial Research published the proceedings of a symposium on energy farming, which included consideration of growing forests specifically for conversion to energy. Forest Service staff took part in this symposium and contributed papers to it.

The New Zealand Energy Research and Development Committee has recently published a study of future energy scenarios for New Zealand over the next 50 years, with special emphasis on liquid fuels. One of the three scenarios discussed was that of "Limited Growth", which postulated for New Zealand a future wherein, among other things, population reaches a peak and then declines, manufacturing industries with heavy demands on natural resources are constrained or even phased out, and there is a steady move towards reliance on renewable resources. In this context it saw New Zealand undertaking production of alcohol from trees, eventually obtaining all its liquid fuel requirements from this source. To do this, allowing for some growth in pulp production, the present area of plantations (650 000 ha) would have to be expanded fourfold, that is from 2.4 percent to just under 10 percent of total land area. There should be little doubt that plantations, whatever their size and composition, could have a role to play in providing energy in one form or another, not merely in the forest industries themselves but as a source of liquid fuel for other users.

Within the industry the present main use of wood is to produce steam from boilers for heating; if economic this steam could also be used to generate electricity. Alternatively, fuel gas can be obtained from wood by the processes known as pyrolysis and gasification. This gas may be used as a form of energy in various ways or further processed to yield liquid fuels such as methanol or synthetic petrol. It is important that the related merits of the various processes using wood be assessed and their commercial viability compared. Research into the gasification process is being done by the Department of Scientific and Industrial Research. Of the several agencies carrying out research into chemical or biological processes the Forest Research Institute is working on the chemical conversion of wood cellulose by hydrolysis and fermentation to ethanol.

At the Forest Research Institute ethanol has been produced from waste radiata pine wood and the yield quantified. Ethanol is used successfully overseas as an additive to petrol and could be used similarly in New Zealand; a 20 percent addition of ethanol would effect savings in overseas funds of some $60 million annually. At this stage the need is to improve the technical and economic efficiency of the conversion of wood to ethanol, to acquire design data for a large scale industrial plant, and to reduce capital cost requirements. Subject to finance being available further work will be done at the institute in the coming year. The next stage would involve a pilot scale plant to test and refine production costs; this would be much more expensive but would logically come within the research and development functions of the Forest Service.

EXOTIC AFFORESTATION

New planting by the State and private sectors in 1976 is expected to total approximately 48 200 hectares, made up of 22 300 ha by the Forest Service and 25 900 ha by companies, local authorities, farmers, and others. This is the highest level of exotic afforestation ever achieved, surpassing the previous year's figure by some 4000 ha, and may be compared with the 40 000 ha planted in 1929 at the height of the depression programme.

The major part of this increase, about 3300 ha, came from private planting chiefly in the Northland and Auckland regions. It is encouraging to see that the drop in the private sector reported last year has been reversed, but it is doubtful if private planting can be maintained at this level unless land becomes available and economic conditions improve.

The area planted by the Forest Service included 6100 ha carried out under the special employment scheme.

STATE WOOD PRODUCTION AND REVENUE

In the year ended 31 March 1976 roundwood removals from State forest amounted to 4360 million m^3, with 530 000 m^3 (12 percent) coming from indigenous forests and 3830 million m^3 (88 percent) from exotic. Provisional figures for 1976–77 show a marked drop from indigenous forests to 433 000 m^3 (9 percent of total) and a substantial increase in exotic wood removals, which reached 4352 million m^3 (91 percent). Much of this increase was due to the uplift of windthrown timber in Canterbury. Total roundwood production, 4785 million m^3, was nearly 11 percent higher than in 1975–76.

Revenue from the sale of State forest wood for the year ended 31 December 1976 was $33.6 million compared with $23.8 million in 1975. With the decline in indigenous forest production referred to earlier, revenue also fell, but exotic sales income increased 48 percent due mainly to log exports and to lifting of the voluntary constraints on stumpages for the first 7 months of the year.

MAJOR FOREST INDUSTRY DEVELOPMENTS

In the latter part of the year the Government accepted the proposal of Winstone Samsung Industries Ltd. for the construction of a thermo-mechanical pulpmill at Tangiwai based on an offering of exotic wood from Karioi Forest. Shareholders are Winstone Ltd. of New Zealand and the Chonju Paper Manufacturing Co. Ltd. of the Republic of Korea. The process, the first of its kind in New Zealand, will utilise industrial wood from Karioi and residues obtained from sawmills in the lower half of the North Island. Approximately 70 percent of the plant's annual output will be exported to Korea for use by Chonju in the manufacture of newsprint, and the balance will be sold on world markets. Pulp production is planned to begin in 1979. Winstone's are required to undertake an afforestation programme to sustain wood supplies to the pulpmill when the Karioi offering is cut out. The proposal will make good use of what is basically a pulpwood resource and will promote the use of currently under-utilised forest and mill residues.

In October 1975 the Government engaged the Finnish firm Jaakko Poyry and Co. Ltd. to undertake a feasibility investigation into the

utilisation of wood resources in the West Coast, Nelson, and Marlborough regions. The consultants are required to investigate and report on the economic feasibility of combining wood resources from the West Coast, Nelson, and Marlborough as a source of raw material for a pulp or pulp and paper industry in the northern part of the South Island and of establishing on the West Coast a panel board or other processing industry using wood from sawmill and forest residues. The report is due in May 1977.

Plans for N.Z. Forest Products Ltd. to develop a pulpmill in Southland based on an annual volume of 170 000 m^3 of State forest beech chipwood were shelved in July 1976. An examination of pulp selling prices and the quantity of wood available indicated the proposal was not viable. Advanced domestic processing of the pulpwood resource appears uneconomic at the present stage. The possibility of chip exports is not strong, but an earlier proposal for this form of utilisation is being re-examined.

Under the NAFTA Agreement, New Zealand and Australia have reciprocal arrangements which give each country a preferred position in the marketing of forest products against third countries. Announced proposals for a newsprint mill at Albury could reduce the market opportunity for Tasman Pulp and Paper Co. in Australia in the early 1980s. Consultations are now expected between the two companies concerned.

The N.Z. Forest Products plywood plant at Kinleith, which utilises peeler logs from Kaingaroa State Forest and from the company's own forests, began production during the year. A new paperboard machine came into production at the N.Z. Forest Products subsidiary at Whakatane during 1976. This machine, which is the company's third, will be capable of producing 60 000 tonnes of paperboard a year and will effectively double the Whakatane mill's total capacity. The Canterbury Timber Products Ltd. medium-density fibre board plant near Rangiora started up during the year and production was well advanced by the beginning of 1977. A company called South Wood Ltd. has been formed in Otago to export wood chips to Japan. The chips are manufactured mainly from sawmill residues which were previously dumped or burnt and the trade is expected to earn about $1 million per annum in overseas funds. Four private companies are involved together with the Forest Service through the Commercial Division sawmill at Conical Hill, which is the largest supplier of chips to the venture.

RECOVERY OF TIMBER IN CANTERBURY

Gale force winds in August 1975 caused severe damage to exotic forests in Canterbury and first indications were that some 3 million m^3 of sawlogs and smallwood was affected. Based on the experience of a previous salvage operation 10 years earlier it was estimated that approximately 2 million m^3 of sawlogs could be recovered and that this would have to be done within 2 years. Subsequent refinement of windthrown volumes reduced the expected sawlog recovery to 1.445 million m^3 but this was increased by 273 000 m^3 as a result of the Hanmer Forest fire in March 1976. Of the windthrown volume, 670 000 m^3 was allocated to the domestic market, while the balance (775 000 m^3), which could not be sawn by local mills before deterioration set in, was made available for export. The Forest Service suspended log exports in other

areas and a large scale recovery operation was mounted. The private sector has been heavily involved, including 33 logging contractors, 3 loading contractors, and 7 transport operators. A substantial volume of wood was also handled by N.Z. Railways.

In the 20 months after the windthrow, 628 000 m^3, just over 80 percent of the export volume, has been uplifted and outlets are available for the balance. The Forest Service co-ordinated the export of logs, buying them in from private suppliers at the prevailing export prices less the costs incurred by the department on the growers' behalf. Forty-six shipments have been made to Japan, 7 to South Korea and 5 to the People's Republic of China, realising approximately $17.8 million in overseas earnings. Overseas markets have also been found for 85 000 m^3 of burnt Corsican pine from Hanmer Forest. Timaru has been the main export port, with a lesser volume being handled through Lyttelton.

From a marketing viewpoint the principal objective has been to retain as much wood as possible for domestic use. Since August 1975 the uptake of windthrown sawlogs for the domestic market has been assessed provisionally at 500 000 m^3. In the past year sawn timber output was increased, mainly by a few of the big mills, with the result that 20 percent more timber was cut throughout Canterbury, compared with 1975–76. To assist in storing sawn timber surplus to market demand a Government funded stockpiling company was set up and currently holds over 28 000 m^3 of sawn timber. It is expected that stockpiling will stop within a few months and timber will be released as soon as possible, coinciding with a return to cutting at a reduced level.

Logging of windthrown timber is virtually complete in South Canterbury, but there is a considerable volume still to be uplifted in North Canterbury, mainly in private ownership.

The trial storage of logs under water sprinklers at Balmoral Forest has been successful so far, although the quantity, 15 000 m^3, is smaller than originally intended. The logs have remained sound and timber sawn from them after 9 months of water treatment shows no deterioration. This trial, which is attracting interest locally and overseas, will be continued for at least another 12 months.

COMMERCIAL DIVISION OPERATIONS

MAJOR MODERNISATION PROJECTS

Two major projects in modernising and re-equipping both mills were completed during the year. At Waipa the original framemill was replaced by modern high throughput machinery which has added significantly to Waipa's overall productive capacity. At Conical Hill, debarking and chipping facilities were installed and woodchips are being exported to Japan through Port Chalmers. The year also saw remanufacturing factories at both mills play an increasing role in providing a wider range of products. Bottlenecks were experienced, however, in various forms of processing, particularly in the pressure treatment and kiln drying of timber. Growing production and changing market trends require a constant reappraisal of processing facilities in large sawmills such as Waipa and Conical Hill, which service wide ranging markets both in New Zealand and overseas.

Energy conservation has been under close study and steps to increase efficiency in steam production and electricity generation are planned for the coming year.

An investigation into the feasibility of introducing a bonus scheme based on total productivity at Waipa has been completed and negotiations with the employees' unions are expected to take place shortly.

During 1976 the sawmilling industry completed an economic survey to establish the adequacy of timber prices and this has led to significant price increases for sawn timber effective from March 1977. However, the problem of controlled prices and rising costs is a continuing one. More progress was made during the year in developing retail sales of timber from mill sites but the absence of a retail marketing network continues to bring problems. The situation was aided considerably by a strong domestic and export market.

PRODUCTION AND SALES

Production at 158 076 m^3 was nearly 6 percent higher than in 1975. Sawn timber sales (excluding remanufactured products) in New Zealand at 109 288 m^3, and overseas at 43 509 m^3, were 18 percent and 67 percent respectively above the previous year. More than 50 percent of total exports went to Australia with the balance being sold in the Middle East, Japan, and the South Pacific. A pleasing feature of the division's overseas marketing was a return to stable volume trading with Japan in the latter part of 1976.

Initial penetration of the Middle East market in 1975 plus a sustained effort in that region this year has resulted in some large but spasmodic orders being secured and supplied. This market is highly competitive and there are unusual difficulties in meeting product specifications and in effecting shipping to the area.

WOOD COSTS

The mills purchase logs at three different price points. Average prices paid per m^3 were as follows: Waipa $3.01 on stump, and $9.18 on forest ride; Conical $12.14 delivered to mill.

PROFITS AND APPROPRIATIONS

Tax paid profits of $762,507 for the year ended 31 December 1976 were 24 percent higher than in 1975 and turnover for the year at $17,043,049 was up 47 percent. The year's results allow for paying the same dividend as last year, 14 percent, while retaining higher profits. Profits will be apportioned as follows:

	$
Tax paid profits	762,507
Transfer to fire insurance reserve	25,000
Available for distribution	737,507
Dividend at 14 percent	557,580
Retained profits	$179,927

Detailed accounts for the year ended 31 December 1976 are in Appendix 14.

PRODUCTION FORESTRY MANAGEMENT

ACQUISITION OF LAND

The ability of the Forest Service to acquire land is governed by the size of the annual appropriation for this purpose. Over the last few years this has been sufficient to acquire areas equivalent to less than half of the new area of exotic forest established annually, and there has been a depletion of the plantable land bank in some localities. Accordingly, recent land acquisition for afforestation has been confined to those regions with the most urgent needs, for example the severely eroded catchment areas of East Coast - Poverty Bay. Other areas of high priority are Southland, Northland, and Hawke's Bay.

Because of the committed finance the purchase of indigenous forest land has been almost entirely precluded; nevertheless where areas of exceptional importance can be bought every attempt is made to do so. This year a particularly worth-while acquisition has greatly improved public access to Haurangi Forest Park.

During the year afforestation leases of two areas of Maori land were signed, Te Awahohonu (8 428 ha) and Te Whaiti Nui-a-Toi (2 009 ha).

TOPDRESSING OF EXOTIC FOREST

Most State afforestation is confined to marginal land with the result that problems are experienced in some areas with the growth of trees, and nutrient deficiencies have resulted in remedial topdressing being essential to carry the crop through to maturity. Rates of application vary depending on the nature of the particular deficiency, but treatment is generally required only once or twice during the life of the crop. Currently the Forest Service topdress about 8 000 ha annually, the principal deficiencies treated being copper in certain coastal sands, boron in South Island gravel soils, and phosphorus in Northland "gumland" clay soils. More recently it has become evident that increased volume production can be obtained from exotic forest by applying nitrogenous fertiliser, particularly if this is carried out in conjunction with a thinning.

Although the response to this form of nitrogen will vary from one soil type to another a significant increase in growth can be expected in almost every exotic forest. However, any decision to carry out such an application needs to be carefully weighed up in terms of economic worth, that is, compared with making the same investment elsewhere in forestry. The forest industry, relative to agriculture, is an insignificant user of fertiliser; in 1974, for example, it used only 0.2 percent of New Zealand's superphosphate requirement.

FOREST DISEASES

Weather conditions which favoured the spread of pine needle blight (*Dothistroma pini*) during the summer months necessitated the spraying of 63 000 ha of exotic forest of all tenures. The extensive scope of this control programme and weather less favourable to the development of the disease over the last few months should result in a reduced programme next year.

EUCALYPT WORKING CIRCLE

Both the 1969 and the 1974–75 Forestry Development Conferences recommended the establishment of sufficient resources of selected eucalypts and other special purpose species to enable the development of industries based on the resource. It was also considered that by the Forest Service establishing stands of these species in strategically located State forests the private sector could be encouraged to follow suit in their own long-term planning. Over the years a number of species of eucalypt have been planted in New Zealand, initially to provide naturally durable timber and latterly for shelter and amenity purposes. The multiplicity of species has led to confusion over identification which, together with the considerable differences in timber properties between the species, has caused growers, millers, and end-users alike to be very wary of eucalypts. If an industry based on the utilisation of New Zealand grown eucalypts is to be viable then enough timber with similar properties must be available in order to encourage the setting up of processing and marketing outlets. The number of species to be grown in any locality should be restricted to a few of the proven timber species which have shown fast growth rates in New Zealand and are not attacked by defoliating insects or opossums.

The recommended species are *Eucalyptus saligna* and *E. botryoides* for the northern part of the North Island, and *E. regnans* and *E. delegatensis* over much of the remainder of the country. In mild situations, although not possessing good sawing properties, *E. nitens* grows rapidly and could be a valuable source of hardwood pulp, while *E. pilularis*, *E. muelleriana*, and *E. globoidea* produce timber of good durability and high strength but of little decorative value.

Over the last 2 years the Forest Service has established 400 ha per annum of eucalypts, the emphasis being on the production of high quality sawlogs of finishing or decorative quality. The object will be to reduce the need to import similar timbers and to replace indigenous timber having the same qualities. More recently approval has been given for the establishment of a eucalypt working circle based on State forests in the Coromandel region at an annual level of 80–100 ha. An ultimate total resource of up to 1000 ha is proposed, with management directed towards the production of high quality timber and veneer logs.

WORK PROGRAMME IN STATE EXOTIC FORESTS

The following operations were carried out in State exotic forests in 1976–77 (figures are provisional):

	Hectare
New planting (including leasehold land)	22 278
Restocking of logged forest	6 635
Pruning (over 95 percent in radiata pine)	20 215
Thinning	22 264
Clear felling	7 678

Forest Service nurseries have raised about 65 million seedlings for planting in the coming winter.

LAND USE SURVEYS

During the past year the Forest Service has taken part in a number of important regional land use surveys by interdepartmental teams incorporating a wide range of expertise. These surveys gathered together

information on topography, geology, soils, vegetation, and wildlife to produce an assessment of capability for a variety of land uses. The most important covered the Marlborough Sounds, which has been completed, and the King Country and south Westland, which are still in progress.

EXTENSION FORESTRY

While planting under the Forestry Encouragement Schemes increased to 7760 ha after a drop last year, when it was 6774 ha, the rapidly increasing cost of forest operations is deterring many people from developing woodlots or small forests, or completing previously approved programmes. A more serious effect of the increasing costs, particularly as the maximum grant has remained static since 1970, is that it is discouraging existing owners from carrying out essential tending. Although some 3000 ha of tending was carried out this is estimated to be not more than 50 percent of what should have been done. The wider initial spacing of trees in forests now being established will result in lower timber quality than untended stands currently being harvested, if pruning is neglected.

Rapidly escalating costs have also caused problems with the Forestry Encouragement Loans to local authorities. The current maximum loan does not now meet the cost of establishing and tending a tree crop except under the most favourable conditions. A major review of all extension activity was made during the year and a report recommending improvements to the incentive schemes was submitted to the Government.

The total number of projects under the Forestry Encouragement Scheme is now 1700 covering an area of 97 000 ha, of which 46 000 ha have been planted. To administer these projects adequately requires a steadily increasing number of extension officers. During the year five new appointments were made, and this should enable more attention to be given to the information and educational aspects of the work. This is important if owners are to gain sufficient knowledge to enable them to make the correct management decisions. The one week residential courses and the correspondence course, together with local field days, are achieving very good results.

FIRE CONTROL

The 1976–77 fire season presented few problems. Rainfall was abundant and well distributed and the South Island has rarely been as green in the summer months. The weather retarded land clearing burns but was particularly appreciated in Canterbury where the exotic forest windthrow presented a constant hazard.

A commission of inquiry convened in June 1976 to investigate a major fire in Hanmer State Forest at the end of March 1976 found nothing seriously untoward in either the circumstances of the fire or the conduct of the fire fighting. The members made recommendations concerning fire behaviour and control in Canterbury and these are being acted upon.

The draft consolidation and amendment of the Forest and Rural Fires Act 1955 was completed during the year and the bill is programmed for legislation in the coming year.

A new concept in exotic forest fire insurance was introduced jointly by the underwriters and the New Zealand Forest Owners' Association. Its main attraction is a more reasonable premium than hitherto available.

Inset

ENVIRONMENTAL FORESTRY

FOREST SANCTUARIES AND PARKS, AND RECREATION AND DEDICATED AREAS

(See Appendix 5)

Forest Sanctuaries

Thirteen forest sanctuaries totalling 15 416 ha were gazetted between 1951 and 1973. Many proposed sanctuaries have been investigated since 1973 and some of these have instead been dedicated, or reserved for gazettal as ecological or like areas in terms of the 1973 and 1976 amendments to the Forests Act 1949. Both of these amendments made wider provision for recognising and protecting areas with important scientific, ecological, geological, wildlife, and other values not warranting the stricter protection conferred by sanctuary status.

State Forest Parks

On 28 February 1977 Her Majesty the Queen signed the Proclamation setting apart 175 751 ha of State forest land in Nelson and Marlborough as the Mt Richmond State Forest Park. During the year additions were made to the Tararua, North-west Nelson, Coromandel, Pirongia, and Catlins Parks, while the Kaweka and Ruahine Parks had areas extracted for lease and boundary definition purposes respectively. Land exchanges for boundary adjustments between Kaimanawa Forest Park and the adjoining Ministry of Defence land are under way. Although there may be a small loss of park land there will be some advantage in securing better access and a more natural park boundary. The setting apart of Hikurangi and Takaputahi State Forests in the East Cape region to form the Raukumara Range Forest Park of over 31 000 ha has now been approved in principle and gazettal is imminent. The establishment of the Hauhangaroa Forest Park west of Lake Taupo has been held in abeyance until the King Country land use study has been completed. Gazetted parks now embrace 1 180 154 ha.

Recreation Areas

The addition of Ahuriri State Forest (6 699 ha) to the Ohau recreation area in Southland Conservancy and the setting apart of the Atuanui and Aupouri recreation areas in Auckland bring the total number of gazetted recreational areas to 12, totalling 107 319 ha.

Dedicated Areas

There are now 13 dedicated areas encompassing 9 179 ha of State forest. Those set aside this year are the Moehau, Riverhead, Waimangarara, and Taumatatawhere ecological areas established primarily to preserve examples of native flora; the Rotokura ecological area and the Waitangi wetland amenity area to preserve bird habitat, and the Pukekura historical area to safeguard a Maori burial ground.

Reservation of Areas for Scientific Purposes

The terms of reference of the Scientific Co-ordinating Committee for Beech Research have been widened to have it advise on the reservation of indigenous State forest for scientific purposes outside the beech project

areas. At the same time, reserve requirements are being considered regionally rather than on an individual forest basis. While these two measures will delay formal gazettal of some reserve areas they should result in a more soundly based network of reserves.

RECREATIONAL USE OF STATE FOREST LANDS

There are large areas of State forest land, reasonably evenly distributed throughout the country, in which recreation is a proper use, in conjunction with the other purposes for which the forests as a whole are managed.

Most State forests are indigenous forests, where the first object of management is soil and water conservation and where recreation is a traditional use of the land. At the same time exotic State forests, especially those close to towns and cities, are receiving increasing numbers of visitors. For instance, 140 000 people visited Whakarewarewa State Forest Park this year, while in Hanmer State Forest nearly 15 000 people visited the Conical Hill Lookout between January and the end of March alone. During the whole year over 4 200 used the Hanmer Forest walk, 255 groups used the forest for pony treks, and 16 formal educational tours were guided through the forest. More exotic forests will in whole or in part be set aside for public recreation.

The overall strategy on development of indigenous forest for public recreation has been to accord highest priority to ensuring there is adequate public access to the boundary of the forest and, in known high-use fringe areas, to provide a minimum of facilities, increasing the number or upgrading the standard as public use grows and the users make known their needs. Exotic production forests already have adequate public road access, and internal roads offer further opportunity for a wide range of recreational use of the forest.

Unfortunately constraints in finance during the year have limited the extent to which basic facilities can be provided so that more forests can be opened to the public. In State forest parks and other forests managed for recreation, practically all development work had to be curtailed for the time being.

New Zealand is fortunate in having large areas of indigenous forest set aside in State forests and other lands of the Crown, with a vast potential for public recreation and enjoyment. So that the public may avail themselves of this potential, rights of entry to State indigenous forests are as liberal as is consistent with public safety, the safety of the forest itself, and the protection of other forest values. Little, however, has been known of the resource or the user impact as it affects recreational planning. In the past small scale surveys have been carried out in the Kauaeranga Valley of Coromandel State Forest Park and on the Heaphy Track, North-west Nelson State Forest Park, to assess the needs of recreational users, but no broadly based resource surveys had been undertaken, partly through lack of staff trained in the methodology required. One such survey has however now been completed for the West Coast beech project area.

Surveys of recreational users, such as where they come from, their impact on the resource, and their recreational needs, have also made some progress. These range from simple surveys of numbers of people using a specific area to detailed investigations of survey techniques such as has been undertaken by a graduate in Craigieburn State Forest Park. A study by the Sociology Department of Victoria University for the Mountain Safety Council in the Tararua State Forest Park, which was

assisted by the Forest Service, helped to provide information on the type and intensity of recreational use. A more comprehensive Tararua survey is proposed, as are others so that development of State forest parks and other areas of State forest can be guided by recreational plans reflecting the needs and desires of all sections of the public, but especially those of the current active users.

NOXIOUS ANIMALS

Opossum Control

Control of opossums to combat tuberculosis in cattle in the animal health problem areas demarcated by the Ministry of Agriculture and Fisheries has, with one exception, been taken to the stage where regular herd testing, followed where necessary by further local action against opossums, can maintain a low incidence of the disease. Unless there are outbreaks in new areas involving opossums as the vector for spreading the disease, the present operations against opossums on the West Coast, in the central North Island, and in the Hokonui Hills, Southland, should be progressively reduced. However, the Wairarapa district, where large scale measures were undertaken during the year, remains a major problem area, and it would appear that the majority of farmlands and adjacent forest lands will require opossum control treatment.

1080 Poison

The urgent need to control opossums for animal health purposes, in addition to the protection of vulnerable indigenous and exotic forests, necessitated the increased use of 1080 poison. There has been some public concern over its use and meetings have been called where the need for its use in the bovine Tb control programme as well as the practical safeguards used have been explained. In most disease control situations large areas of forest land are involved, and aerial poisoning is the only practical and economical means of quickly reducing animal numbers. 1080 is the most effective poison available and the levels of application are adjusted according to local conditions so as to present minimum hazard to human life, farm animals, and birds.

Helicopter Hunting

There has been some criticism of the Forest Service in regard to an apparent lack of control of helicopter hunting but it is repeatedly overlooked that the department cannot control entry to any land other than State forest. Amendments to the Noxious Animals Act are being considered so that areas for commercial meat recovery and recreational hunting are more precisely defined. This may involve laying down broad zones for commercial hunting and identification of areas where selected herds of deer may be controlled by recreational hunters alone. Licensing of helicopters engaged in commercial game recovery is being considered by the Civil Aviation Division of the Ministry of Transport.

PRODUCTION, CONSUMPTION, AND TRADE

Because of the date of publication of the annual report, the latest actual production figures available are for the year ended 31 March 1976. See appendices.

TOTAL WOOD PRODUCTION

Total removal of roundwood from all forests is estimated at 8.3 million m^3. This figure is slightly lower than the figure recorded for the year ended March 1975 of 8.4 million m^3

SAWN TIMBER PRODUCTION

Production of sawn timber at 2 003 000 m^3 was down by 82 000 m^3 (4 percent) from the previous year's cut. Indigenous sawn timber production increased by 8000 m^3 to 374 000 m^3 whereas production of exotic timber dropped by 90 000 m^3 (5 percent) to 1 629 000 m^3. Subsequent survey results indicate an increase in the overall production of sawn timber for the year ended 31 March 1977 notwithstanding a distinct reduction in indigenous sawn production.

PULP AND PAPER

Pulp production of mechanical and chemical types for papermaking is continuing to rise, a figure of 953 000 tonnes being recorded for the year ended March 1976, an increase of 60 000 tonnes from the previous year. The estimate for the year ended 31 March 1977 is 1 000 000 tonnes.

Paper and paperboard production increased by 8000 tonnes to 555 000 tonnes. Newsprint production increased by 11 000 tonnes to 219 000 tonnes, whereas production of other paper and paperboard decreased 3000 tonnes to 336 000 tonnes. Production of newsprint for the year ended March 1977 is expected to rise to about 270 000 tonnes and other paper and paperboard to about 350 000 tonnes.

PANEL PRODUCTS

Production of panel products rose slightly. Particleboard production rose to 128 000 m^3, an increase of 15 000 m^3; fibreboard at 44 000 tonnes remained virtually static and plywood dropped to 19 000 m^3. Particleboard and plywood production for the year ended March 1977 is expected to be slightly higher. Production of fibreboard is expected to be about 56 000 tonnes the year ended March 1977.

EXTERNAL TRADE

The latest available statistics for trade in forest products are for the year ended June 1976 for imports and December 1976 for exports. Total exports again showed an impressive increase to reach a value of $196.3 million f.o.b.

EXPORTS OF FOREST PRODUCTS

Exports of Sawn Timber

The volume of sawn timber exported increased by 77 000 m^3 to 237 745 m^3, and its value increased by $6 million to $16.4 million.

Exports of Paper and Pulp

Exports of paper and paperboard increased to 247 689 tonnes. Newsprint rose 57 009 tonnes to 164 000 tonnes and the volume of other paper by 16 000 tonnes to 84 000 tonnes. The value of all paper and paperboard exports rose by $29.2 million to $73.3 million. Pulp exports continued to rise, with volume increasing by 35 000 tonnes to 370 000 tonnes and value going up by $14 million to $63 million.

Exports of Logs

Log export volumes increased by 76 percent to 986 000 m^3, worth $27.2 million.

The value of exports of chips and miscellaneous forest products increased to $17.0 million.

IMPORTS OF FOREST PRODUCTS

The volume and value of imports for 1976 has decreased. The total c.d.v. value was $35 million compared with $53 million for the previous year. The volume of paper and paperboard decreased 66 percent to 20 000 tonnes, with a decrease in value of 42 percent. Log imports increased 3000 m^3 to 8000 m^3 but sawn timber imports decreased 54 percent to 25 000 m^3. Pulp imports have risen by 2000 tonnes from the previous year to 6000 tonnes due to an increase in chemical pulp. The volume and value of other forest products imported decreased slightly.

RESEARCH AND DEVELOPMENT

RESEARCH

The report of the Forest Research Institute for 1976, published separately, deals fully with the research programme.

UTILISATION DEVELOPMENT

The survey by the Utilisation Development Division of timber and wood-based products in residential construction, mentioned in last year's report, has been completed and the results released. A further survey of manufactured products, carried out with the assistance of the Department of Statistics is currently being written up, as is one on the use of wood in pallet manufacture. Various studies of different beech species are nearing completion and data obtained on end-user trials undertaken in co-operation with North Island firms are being collated. The utilisation study of hard beech from the West Coast has been completed and is awaiting publication.

TIMBER INSPECTION AND QUARANTINE

There has been a large increase in both log and timber exports during 1976 compared with last year; the main increase in log exports stemmed from the Canterbury windthrow. Container shipping has expanded considerably during the past year with approximately 15 new shipping lines operating on the New Zealand run. The rapid growth in containerisation has brought with it problems on the coding of container contents, and current investigations aim to improve documentation in this respect. Dunnage, cases, crates, and wood packing still pose the greatest risk of accidental introduction of foreign insects, and inspectors intercepted a considerable number of potentially dangerous insects in this type of material.

A revision of the Forest Produce Import and Export Regulations 1966 has been undertaken and the new regulations should come into force in 1977. The Termites Act and regulations previously administered by the Housing Corporation of New Zealand have been repealed and the Forests Amendment Act 1976 now covers termites and other insects.

TIMBER PRESERVATION AUTHORITY

The Timber Preservation Authority, in its twenty-first year, continued its work of regulating the use of timber preservatives, preserving processes, and techniques to maintain a high standard of treatment. Two members of the authority retired during the year. Mr Carlton Pollard, an inaugural member, is replaced by Mr R. C. Hansen as representative of the New Zealand Timber Merchants' Federation. Mr W. A. Garth representing the Commissioner of Works and Development has retired and Mr C. T. O'Cain has been appointed to the vacancy.

At 31 March 1977 there were 299 treatment plants registered with the authority, an increase of six from 1976. Nine new plants were registered and three registrations were cancelled. It was found necessary to suspend the operations of five plants until their standard of technical control could be raised to acceptable levels.

In the year under review the authority introduced specifications for the treatment of poles for house frame construction and the use of native timbers for exterior joinery. In the light of technical data received from its many sources, the authority found it necessary to withdraw approval to treat podocarp timbers from the specification for moderate decay hazard timbers, and all hardwoods were withdrawn from the specifications for groundline treatment.

ENGINEERING DIVISION

COMMUNITY CENTRE, KAINGAROA FOREST

Approval has been obtained to build a community centre for the residents of Kaingaroa village. It will be a two storey building of 750 square metres catering for meetings, social gatherings, and youth activities.

PHOTOGRAPHY

During the year 9000 km^2 of State forest was covered by aerial photography. Of this 5000 km^2 was of a type especially planned for interpretation purposes such as defining forest types and determining timber volumes, and 4000 km^2 was flown to produce topographical maps needed for management and engineering planning. Increasing use is being made of small cameras carried in light aircraft for day-to-day management needs, such as measurement of areas for contract payment and defining boundaries for various operations. A seminar on the use of small cameras for forestry purposes was organised by the department and the recorded proceedings have been keenly sought and widely distributed overseas.

MAPPING

During the year the Department of Lands and Survey produced 1300 km^2 of 1:10,000 and 3400 km^2 of 1:25,000 topographical mapping for the Forest Service.

DEVELOPMENT OF MACHINERY

Divisional staff have worked closely with the Agricultural Pest Destruction Council to develop a pilot plant for producing poison pellets used to kill opossums. This plant can produce pellets at the rate of $\frac{1}{2}$ tonne/hour compared with $\frac{1}{2}$ tonne/week by hand.A greatly increased output is needed because of the bovine Tb eradication programme.

In conjunction with industry a semi-automatic chain type tree planter and a rolling drum type planter have been developed and prototypes are currently under trial. A prototype portable fumigation plant has also been built and is undergoing tests.

INFRA-RED FIRE DETECTION EQUIPMENT

One of the major recommendations of the Commission of Inquiry into the Hanmer Forest fire referred to the need to be able to detect hot spots after vegetation had been burnt. Equipment already proved in Canada for this purpose has been purchased and is being evaluated under New Zealand conditions.

VEHICLES AND PLANT

The limited amount of finance available over the last 5 years is affecting the operating standard of much of the department's fleet. While the light vehicle position is fairly satisfactory, the heavy vehicle fleet contains many items overdue for replacement and the general condition of tractors, graders, nursery machinery, and loaders is far from satisfactory.

OTHER ACTIVITIES

OVERSEAS AID PROJECTS

As part of the Government's policy of increased aid to the South Pacific, assistance with forestry projects has been stepped up in that region. Most of this aid has been concerned with practical forest management development in countries such as Tonga, Western Samoa, Fiji, the Solomon Islands, and Papua New Guinea. Experts on secondment to these countries cover a wide range of skills including nursery techniques, forest establishment, surveying, civil and mechanical engineering, training, and sawmilling.

The Fiji Pine Scheme, which is now administered by a statutory commission, is still the most important project, with eight officers seconded to the staff of the commission. New developments during the year were the introduction of a pilot cattle grazing scheme in a selected forest area, revision of the original profitability analysis, and a co-operative production forestry research scheme with the New Zealand Forest Research Institute. Other activities included training in civil and mechanical engineering, completion of the first stage of aerial survey and topographical mapping, and inventory studies by students from Canterbury University School of Forestry.

Project teams have been established in the Solomon Islands and in Western Samoa as a practical follow-up to advisory and consultant visits to those countries in previous years. The principal of the Timber Industry Training Centre has been seconded to supervise a similar centre being established under New Zealand aid in Papua New Guinea. Engineering staff of the Forest Service have been involved in the planning and establishment of this centre, which will include a sawmill and saw doctor's shop.

A very successful South Pacific regional seminar on coconut palm stem utilisation was held in Tonga under the direction and guidance of the New Zealand Forest Service, assisted by specialists from Fiji and the Philippines. There are many similarities in the development of sound forestry practices and land use management in the South Pacific countries, and it is likely that New Zealand could be called upon further to sponsor regional meetings so that experience and knowledge can be shared, problems defined, and a concerted and co-ordinated approach mounted to solve mutual problems.

As part of its programme for regional assistance the Government is supporting an end-use survey of tropical hardwoods exported from the ASEAN countries to world markets. The objective of the survey, which is being conducted by a private New Zealand consulting company in association with the Utilisation Development Division of the Forest Service, is to identify and quantify the current end-use of exported ASEAN forest products and to promote their wider use.

Short-term advisory visits on possible forestry projects have been undertaken in countries as far apart as India and Guyana covering a range of skills from forest fire protection to design of small portable sawmills. In addition many visits have been made by senior officers to monitor progress and advise on future direction and expansion of existing aid projects.

There is no doubt that forestry offers many opportunities for economic and social development in the rural areas of many countries in the Pacific

Basin. A major constraint likely to affect the extent of future assistance is the shortage of qualified and experienced field staff available for overseas assignments.

TRAINING

Approval from the Technicians Certification Authority for the introduction of the New Zealand Certificate in Forestry in 1977 marks a most significant advance in subprofessional forestry education in New Zealand. Staff who are training to become future forest rangers will have two study options available to them. The first option, forest management, is designed for those who aim to be forest managers, while the second, forest technology, will be for those whose careers are directed towards technical and research work. Teaching of the new certificate will be on a block course basis at the Forestry Training Centre, Rotorua. Initial interest from private industry in the new certificate is encouraging, with 20 students enrolling to attend the first block course.

Woodsman Schools at Aupouri, Kaingaroa, Golden Downs, and Berwick continued to provide valuable basic field training and 70 woodsmen graduated at the end of 1976.

At the end of 1976, 11 forester trainees successfully completed their Bachelor of Forestry Science degree studies at the University of Canterbury. Post-graduate study at the same university was completed in 1976 by one forester while another commenced in 1977. Both are studying for the Masterate of Forestry Science. Another forester graduate is taking the 2-year Diploma of Landscape Architecture course at Lincoln College.

The Forest Service has long recognised the benefit of progressive adult training. During the year 409 staff attended courses at the Forestry Training Centre to learn more about modern forest practices and current concepts in forest management and administration.

Attendance at courses run at the Timber Training Centre remained steady during 1976 although the difficulty in appointing a chainsaw instructor and the consequent reduction in these courses resulted in total course attendance being down on the previous year. The major capital additions to the centre have been machinery to put carbide tips on saws and an extra lecture room. This centre continued to contribute to New Zealand's overseas aid training programme with trainees coming from Fiji, Papua New Guinea, Tonga, Solomon Islands, Malaysia, Laos, Thailand, Samoa, New Hebrides, and Niue.

The Utilisation Development Division conducted courses during the year in silviculture and utilisation, wood drying and preservation, and timber grading. In total 156 people from industry attended these and other courses run by the department at the Forestry Training Centre.

OVERSEAS VISITS

As was the case last year assistance was provided to priority forestry development projects overseas, with short-term assignments being undertaken by 28 officers. In addition, visits for departmental purposes included trade negotiations, sawn timber and logs sales, scientific investigations, and representation at international meetings consistent with New Zealand's obligations and standing in the forestry world.

The Director-General attended the Third Session of the FAO Committee on Forestry in Rome.

The Director, Marketing Manager, and other marketing officers of Commercial Division visited Japan, Australia, and the Pacific Islands, primarily to arrange sales of sawn timber but also, in Japan, the export of wood chips. The Assistant Director (Operational and Technical) of the division visited Japan to discuss with authorities there tariffs and specifications relating to radiata pine sawn timber.

The Director of Marketing and another officer negotiated log sale contracts in Japan, the Republic of Korea, and the People's Republic of China.

The Director, Forest Economics Division, took part in NAFTA discussions in Australia.

A Principal Forester travelled to London for discussions with the consultants who are reporting on utilisation prospects for forests in Nelson and the West Coast.

At the 16th Congress of the International Union of Forest Research Organisations held in Norway in 1976, the Director of Research was elected to the Executive Board and subsequently attended a meeting of the board in Nigeria.

Scientists from the Forest Research Institute visited North America to gain further knowledge on hydrological research and forest slope stability and also attended the Third World Consultation on Tree Breeding held in Australia.

APPENDIX 1

Area of State Forest Land as at 31 March 1977

(Area in hectares)

Conservancy	Permanent State Forest		Total Area of State Forest Land	State Forest Land as Percentage of Total Land Area of Conservancy
	Ordinary	National Endowment		
(1)	(2)	(3)	(4)	(5)
Auckland	350 254	38 313	388 567	11.4
Rotorua	402 559	132 739	535 298	17.0
Wellington	584 848	16 506	601 354	12.7
Nelson	934 143	290 014	1 224 157	43.8
Westland	499 709	229 315	729 024	46.6
Canterbury	278 107	1 476	278 583	6.8
Southland	442 250	28 317	470 567	6.9
Total	3 491 870	736 680	4 228 550	15.9

Reservations and Withdrawals

	Hectares
Land placed under State reservation	79 773
Areas withdrawn from reservation comprised—	
For settlement	3 249
For national parks	736
For roads	2
For scenic reserves	1 369
Other	820

APPENDIX 2

New Area Planted in State Exotic Forests—by Species

(Area in hectares)

Year Ended 31 March	Radiata pine	Douglas fir	Corsican pine	Other	Total
(1)	(2)	(3)	(4)	(5)	(6)
1953 ..	1 089	344	368	494	2 295
1954 ..	1 157	299	174	364	1 994
1955 ..	1 198	534	194	223	2 149
1956 ..	1 724	486	223	279	2 712
1957 ..	1 514	680	259	380	2 833
1958 ..	1 586	939	409	498	3 432
1959 ..	862	846	599	575	2 882
1960 ..	1 036	680	437	741	2 894
1961 ..	1 926	858	356	761	3 901
1962 ..	2 651	915	603	595	4 764
1963 ..	3 675	749	822	898	6 144
1964 ..	5 075	745	848	775	7 443
1965 ..	5 947	1 571	551	606	8 675
1966 ..	6 115	1 233	844	123	8 315
1967 ..	6 159	1 664	463	302	8 588
1968 ..	7 188	2 008	173	292	9 661
1969 ..	10 240	2 391	272	588	13 491
1970 ..	11 746	2 166	192	683	14 787
1971 ..	12 674	1 435	97	532	14 738
1972 ..	11 795	880	27	311	13 013
1973 ..	15 792	1 107	19	440	17 358
1974 ..	19 673	794	20	472	20 959
1975 ..	19 515	795	15	704	21 029
1976 ..	20 150	653	9	853	21 665
1977 ..	20 793	719	25	741	22 278

APPENDIX 3

Establishment and Clear Felling in State Exotic Forests

(a) *Totals for Conservancies as at 31 March 1977**

(Area in hectares)

Conservancy	Operations During Year			Other Changes in Stocked Area	Stocked Area	Areas Awaiting Restocking	Total Productive Area
	New Area Planted	Former Productive Areas Re-stocked By Replanting	Area Clear Felled with Yield				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Auckland	3 925	820	652	+ 41	56 910	1 319	58 229
Rotorua	6 596	4 307	4 449	−751	177 728	5 279	183 007
Wellington	3 556	266	259	− 8	50 950	675	51 625
Nelson	2 979	421	368	+ 19	40 709	690	41 399
Westland	1 324	..	26	+ 1	11 349	26	11 375
Canterbury	745	543	1 685	− 7	25 295	3 638	28 933
Southland	3 153	278	239	−373	42 287	219	42 506
Total	22 278	6 635	7 678	−1 078	405 228	11 846	417 074

*Provisional.

(b) *Totals for Both Islands and New Zealand*

(Area in hectares)

Region	Operations During Year			Other Changes in Stocked Area	Stocked Area	Areas Awaiting Restocking	Total Productive Area
	New Area Planted	Former Productive Areas Re-stocked By Replanting	Area Clear Felled with Yield				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total North Island, year ended 31 March—							
1977*	14 077	5 393	5 360	− 718	285 588	7 273	292 861
1976	14 132	5 462	4 744	+1 265	272 196	6 570	278 766
1975	13 164	5 454	4 004	−2 566	255 599	4 716	260 617
1974	13 248	4 416	3 591	−1 572	243 852	5 227	249 080
1973	10 750	3 303	3 630	− 306	231 209	5 763	236 972
1972	8 004	2 937	3 054	− 807	221 094	6 324	227 418
Total South Island, year ended 31 March—							
1977*	8 201	1 242	2 318	− 360	119 640	4 573	124 213
1976	7 533	1 809	1 840	− 892	112 875	3 509	116 384
1975	7 865	1 084	1 179	−1 451	106 265	3 219	109 484
1974	7 711	1 474	1 102	− 442	99 947	2 672	102 619
1973	6 608	1 303	1 032	− 334	92 272	3 459	95 731
1972	5 009	2 011	1 493	− 779	85 727	3 461	89 188
Total New Zealand, year ended 31 March—							
1977*	22 278	6 635	7 678	−1 078	405 228	11 846	417 074
1976	21 665	7 451	6 584	+ 373	385 071	10 079	395 150
1975	21 029	6 538	5 183	−4 017	362 166	7 935	270 101
1974	20 959	5 890	4 693	−1 984	343 799	7 899	351 699
1973	17 358	4 606	4 662	− 640	323 481	9 222	332 703
1972	13 013	4 948	4 547	−1 586	306 821	9 785	316 606

*Provisional.

APPENDIX 3—continued

ESTABLISHMENT AND CLEAR FELLING IN STATE EXOTIC FORESTS AS AT 31 MARCH 1976

(c) *By Forests*

North Island Conservancies

(Area in hectares)

Conservancy and Forest	Stocked Area at 31 March 1975	Operations During Year			Other Changes in Stocked Area	Stocked Area at 31 March 1976	Area Awaiting Restocking	Total Productive Area
		New Area Planted	Former Productive Areas Restocked By Planting	Area Clear Felled with Yield				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Auckland—								
Athenree ..	787	..	42	15	..	814	9	823
Aupouri ..	5 735	1 590	..	12	..	7 313	21	7 334
Glenbervie ..	3 183	321	153	28	488	4 117	13	4 130
Great Barrier ..	41	..	..	..	— 7	34	..	34
Kati Kati ..	19	..	..	..	..	19	..	19
Coromandel ..	435	1	22	16	..	442	16	458
Mangawhai ..	929	..	..	..	64	993	..	993
Maramarua ..	4 401	..	212	163	— 24	4 426	112	4 538
Omahuta ..	418	..	34	15	— 79	358	7	365
Puhipuhi ..	535	..	..	..	— 535	..	..	..
Puketi ..	107	..	..	..	— 33	74	14	88
Pureora ..	2 967	595	9	..	6	3 577	..	3 577
Riverhead ..	4 015	..	351	219	— 60	4 087	219	4 306
Russell ..	38	..	..	..	— 4	34	..	34
Tairua ..	7 549	426	85	29	77	8 108	497	8 605
Tanui-Kawhia	391	246	..	..	— 52	585	..	585
Tawarau ..	300	189	..	..	..	489	..	489
Waipoua ..	2 281	123	..	71	— 27	2 306	71	2 377
Waitangi ..	1 838	72	20	19	..	1 911	40	1 951
Waiuku ..	1 075	4	23	16	— 1	1 085	131	1 216
Whangapoua ..	3 446	501	..	..	3	3 950	..	3 950
Whenuakite ..	4	..	..	..	..	4	..	4
Woodhill ..	7 495	556	20	21	..	8 050	21	8 071
Total ..	47 989	4 624	971	624	— 184	52 776	1 171	53 947
Rotorua—								
Haparangi ..	229	..	..	..	..	229	..	229
Horohoro ..	945	130	..	..	2	1 077	..	1 077
Kaingaroa ..	107 609	496	3 628	3 332	31	108 432	1 881	110 314
Lake Taupo ..	8 664	1 956	..	..	— 38	10 582	..	10 582
Mangatu ..	8 321	592	25	..	2	8 940	..	8 940
Manutohi ..	53	..	..	..	..	53	..	53
Marotiri ..	134	..	..	..	..	134	..	134
Patunamu ..	2 189	190	..	..	15	2 394	..	2 394
Rotochu ..	5 548	227	135	127	244	6 027	55	6 082
Ruatoria ..	3 777	1 376	..	..	8	5 161	..	5 161
Tihoi	872	96	..	..	..	968	..	968
Waimihia ..	17 032	48	405	281	687	17 891	2 781	20 672
Waipunga ..	..	197	..	..	..	197	..	197
Wairakei ..	250	..	..	..	..	250	..	250
Whakarewarewa	4 335	126	76	59	27	4 505	..	4 505
Whararata ..	1 900	301	..	..	2	2 203	..	2 203
Whirinaki ..	2 764	180	63	..	— 25	2 982	..	2 982
Total ..	164 622	5 915	4 332	3 799	955	172 025	4 718	176 743
Wellington—								
Awahohonu ..	1 738	602	..	..	— 1	2 339	..	2 339
Erua ..	1 690	..	..	..	..	1 690	..	1 690
Esk ..	2 642	139	..	..	— 6	2 775	..	2 775
Gwavas ..	4 678	192	113	47	— 1	4 935	107	5 042
Karioi ..	7 430	159	83	58	— 52	7 562	63	7 625
Kaweka ..	3 902	276	..	..	..	4 178	..	4 178
Lismore ..	1 904	267	..	..	— 1	2 170	..	2 170
Mohaka ..	4 526	423	26	..	8	4 983	76	5 059
Motuiti ..	13	..	..	..	..	13	..	13
Mount Bruce ..	13	..	..	..	..	13	..	13
Ngaumu ..	5 882	282	32	153	468	6 511	155	6 666
Rangataua ..	..	..	..	..	..	..	..	..
Raupunga ..	48	..	..	..	..	48	..	48
Rimutaka ..	98	48	..	..	..	146	..	146
Rotoaira ..	732	832	..	..	12	1 576	..	1 576
Ruahine ..	135	..	..	..	..	135	..	135
Santoft ..	2 803	92	..	14	— 8	2 889	73	2 962
Tangimoana ..	149	..	..	..	— 1	148	..	148
Tararua ..	356	23	..	..	28	407	..	407
Te Wera ..	1 131	22	..	..	— 12	1 141	..	1 141
Tinui ..	23	..	..	..	..	23	..	23
Tongariro ..	1 026	..	..	..	..	1 026	20	1 046
Waitarere ..	1 258	32	85	49	21	1 347	187	1 534
Waituhui ..	396	..	..	..	..	396	..	396
Woodstock ..	717	204	..	..	5	926	..	926
Poutu ..	..	..	..	..	18	18	..	18
Total ..	43 290	3 593	339	321	+ 494	47 395	681	48 076

APPENDIX 3—continued

ESTABLISHMENT AND CLEAR FELLING IN STATE EXOTIC FORESTS AS AT 31 MARCH 1976

(c) *By Forests*—continued

South Island Conservancies

(Area in hectares)

Conservancy and Forest	Stocked Area at 31 March 1975	Operations During Year			Other Changes in Stocked Area	Stocked Area at 31 March 1976	Area Awaiting Restocking	Total Productive Area
		New Area Planted	Former Productive Areas Restocked By Planting	Area Clear Felled with Yield				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nelson—								
Charleston ..	150	..	..	..	— 132	18	..	18
Dumgree ..	24	..	..	2	..	22	..	22
Golden Downs	24 736	996	470	673	— 317	25 212	736	25 948
Hira	2 631	278	..	..	..	2 909	..	2 909
Hukawai ..	145	..	..	..	..	145	..	145
Inangahua West	96	65	..	..	— 65	96	..	96
Karamea North	110	..	..	..	— 110	..	..	..
Karamea South	29	..	..	..	— 29	..	..	..
Mokihinui ..	241	36	..	..	— 198	79	..	79
Motueka ..	1 751	134	..	..	6	1 891	..	1 891
Ohikanui ..	5	..	..	..	..	5	..	5
Opouri ..	161	29	..	..	— 8	182	..	182
Orikaka ..	97	..	..	..	— 97	..	..	..
Pelorus ..	..	94	..	..	..	94	..	94
Queen Charlotte	135	..	..	..	— 35	100	..	100
Rai Whangamoa	2 934	128	2	..	— 1	3 063	..	3 063
Tawai ..	501	2	16	..	..	519	..	519
Waimea ..	599	299	..	..	..	898	..	898
Wairau ..	1 913	273	..	..	— 3	2 183	..	2 183
Waitahu ..	242	4	..	..	— 4	242	..	242
Total ..	36 500	2 338	488	675	— 993	37 658	736	38 394
Westland—								
Granville ..	281	..	..	..	..	281	..	281
Hochstetter ..	1 407	80	..	12	45	1 520	..	1 520
Hohonu ..	71	7	..	..	..	78	..	78
Ianthe ..	204	..	..	..	..	204	..	204
Kaniere ..	466	90	24	..	— 25	555	..	555
Mahinapua ..	810	..	17	17	30	840	13	853
Mawhera ..	2 313	410	..	..	1	2 724	..	2 724
Nemona ..	1 114	57	..	..	..	1 171	..	1 171
Omoto ..	1 077	243	73	..	— 73	1 320	..	1 320
Paparoa ..	53	32	..	..	— 1	84	..	84
Waimea ..	802	134	284	..	28	1 248	..	1 248
Wanganui ..	25	..	..	..	..	25	..	25
Total ..	8 623	1 053	398	29	5	10 050	13	10 063
Canterbury—								
Ashley ..	5 051	496	141	95	5	5 598	352	5 950
Balmoral ..	7 496	..	212	351	25	7 382	280	7 662
Eyrewell ..	4 867	1	265	249	25	4 909	1 655	6 564
Geraldine ..	1 980	104	..	18	— 77	1 989	20	2 009
Hanmer ..	3 593	111	17	101	..	3 620	179	3 799
Island Hills ..	189	..	..	..	..	189	..	189
Mt. Thomas ..	364	117	..	..	— 15	466	..	466
Omihi ..	1 188	..	26	..	..	1 214	3	1 217
Oxford ..	332	..	..	..	..	332	..	332
Total ..	25 060	829	661	814	— 37	25 699	2 489	28 188
Southland—								
Beaumont ..	2 026	..	54	17	8	2 071	29	2 100
Berwick ..	6 517	831	117	20	12	7 457	15	7 472
Herbert ..	1 444	74	..	82	16	1 452	72	1 524
Hokonui ..	2 330	..	21	18	— 13	2 320	18	2 338
Longwood ..	4 468	279	..	22	34	4 759	12	4 771
Naseby ..	1 433	22	7	33	80	1 509	18	1 527
Otago Coast ..	5 298	796	14	8	— 86	6 014	..	6 014
Owaka ..	1 026	150	..	..	— 13	1 163	..	1 163
Rankleburn ..	2 684	230	..	..	22	2 936	..	2 936
Rowallan ..	1 149	249	..	..	— 35	1 363	..	1 363
Silver Peaks ..	553	136	..	..	..	689	..	689
Slopedown ..	1 908	305	..	..	— 1	2 212	..	2 212
Toringatura ..	1 127	241	..	..	— 1	1 367	..	1 367
Tautuku ..	64	..	..	..	..	64	..	64
West Tapanui	4 055	..	49	122	110	4 092	107	4 199
Total ..	36 082	3 313	262	322	133	39 468	271	39 739

APPENDIX 3—continued

Establishment and Clear Felling in State Forests for the Year Ended 31 March 1976

(d) *By Species*

(Area in hectares)

Conservancy and Species	Stocked Area at 31 March 1975	Operations During Year			Other Changes in Stocked Area	Stocked Area at 31 March 1976
		New Area Planted	Former Productive Areas Restocked by Planting	Area Clear Felled with Yield		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Auckland—						
Radiata Pine ..	38 886	4 592	952	481	+ 22	43 971
Douglas Fir ..	2 103	..	..	..	− 1	2 102
Corsican Pine ..	1 817	..	..	54	− 28	1 735
Other species ..	5 183	32	19	89	− 177	4 968
Total ..	47 989	4 624	971	624	− 184	52 776
Rotorua—						
Radiata Pine ..	101 190	5 679	3 938	1 840	+ 36	109 003
Douglas Fir ..	24 190	166	317	371	− 167	24 135
Corsican Pine ..	10 664	..	..	384	+ 107	10 387
Other species ..	28 578	70	77	1 204	+ 979	28 500
Total ..	164 622	5 915	4 332	3 799	+ 955	172 025
Wellington—						
Radiata Pine ..	26 229	3 349	327	263	+ 448	30 090
Douglas Fir ..	5 365	26	..	1	+ 67	5 457
Corsican Pine ..	2 617	10	..	25	+ 26	2 628
Other species ..	9 079	208	12	32	− 47	9 220
Total ..	43 290	3 593	339	321	+ 494	47 395
Nelson—						
Radiata Pine ..	25 864	1 760	357	337	− 157	27 487
Douglas Fir ..	5 611	234	112	28	− 49	5 880
Corsican Pine ..	2 401	..	..	146	− 125	2 130
Other species ..	2 624	344	19	164	− 662	2 161
Total ..	36 500	2 338	488	675	− 993	37 658
Westland—						
Radiata Pine ..	6 441	945	398	15	− 43	7 726
Douglas Fir ..	446	..	..	..	+ 1	447
Corsican Pine ..	121	..	..	..	..	121
Other species ..	1 615	108	..	14	+ 47	1 756
Total ..	8 623	1 053	398	29	+ 5	10 050
Canterbury—						
Radiata Pine ..	15 234	652	661	736	+ 1	15 812
Douglas Fir ..	2 438	145	..	6	− 27	2 550
Corsican Pine ..	3 773	..	..	26	+ 6	3 753
Other species ..	3 615	32	..	46	− 17	3 584
Total ..	25 060	829	661	814	− 37	25 699
Southland—						
Radiata Pine ..	26 764	3 173	229	182	− 60	29 924
Douglas Fir ..	3 047	82	18	12	+ 79	3 214
Corsican Pine ..	3 386	..	..	52	+ 121	3 455
Other species ..	2 885	58	15	76	− 7	2 875
Total ..	36 082	3 313	262	322	+ 133	39 468
New Zealand—						
Radiata Pine ..	240 608	20 150	6 862	3 854	+ 247	264 013
Douglas Fir ..	43 200	653	447	418	− 97	43 785
Corsican Pine ..	24 779	10	..	687	+ 107	24 209
Other species ..	53 579	852	142	1 625	+ 116	53 064
Total ..	362 166	21 665	7 451	6 584	+ 373	385 071

APPENDIX 4

Pruning and Thinning in State Exotic Forests for the Year Ended 31 March 1977

(Area in hectares)

Conservancy and Species	Pruning					Thinned During Year	
	Area Pruned During Year			Total Pruned Area to Date			
	Total Area Pruned	To First Log	To Second Log	To First Log	To Second Log	With Yield	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Auckland—							
Radiata Pine ..	2 655	521	..	7 747	782	612	1 796
Douglas Fir ..	..	..	..	62	..	..	191
Corsican Pine ..	..	..	..	..	..	..	..
Other species ..	2	2	..	1 140	138	11	37
Total ..	2 657	523	..	8 949	920	623	2 024
Rotorua—							
Radiata Pine ..	10 115	6 272	..	44 344	605	1 700	7 339
Douglas Fir ..	..	..	..	3 996	7	189	122
Corsican Pine ..	..	..	..	2 138	53	..	..
Other species ..	..	1	..	1 273	..	27	4
Total ..	10 115	6 728	..	51 751	665	1 916	7 465
Wellington—							
Radiata Pine ..	1 619	331	..	5 217	34	401	3 047
Douglas Fir ..	..	..	..	284	..	..	30
Corsican Pine ..	..	..	..	221	109	30	..
Other species ..	58	..	..	2 418	12	1	91
Total ..	1 677	331	..	8 140	155	432	3 168
Nelson—							
Radiata Pine ..	1 396	261	..	3 097	136	..	1 880
Douglas Fir ..	..	..	..	1 029	1	49	30
Corsican Pine ..	..	..	..	1 555	..	..	16
Other species ..	..	..	..	123	..	..	15
Total ..	1 396	261	..	5 804	137	49	1 941
Westland—							
Radiata Pine ..	745	70	..	261	..	8	630
Douglas Fir ..	..	..	..	..	..	..	..
Corsican Pine ..	..	..	..	..	..	..	..
Other species ..	10	..	..	..	..	..	29
Total ..	755	70	..	261	..	8	659
Canterbury—							
Radiata Pine ..	1 037	140	..	940	110	202	914
Douglas Fir ..	..	..	..	223	..	..	131
Corsican Pine ..	..	..	..	617	2	..	2
Other species ..	24	..	..	164	..	..	2
Total ..	1 061	140	..	1 944	112	202	1 049
Southland—							
Radiata Pine ..	2 648	397	..	3 948	34	156	2 133
Douglas Fir ..	81	..	..	423	..	63	282
Corsican Pine ..	19	..	..	448	5	53	..
Other species ..	1	..	..	192	14	3	38
Total ..	2 749	397	..	5 011	53	275	2 453
New Zealand—							
Radiata Pine ..	20 215	8 447	..	65 554	1 701	3 079	17 739
Douglas Fir ..	81	..	..	6 017	8	301	786
Corsican Pine ..	19	..	..	4 979	169	83	18
Other species ..	95	3	..	5 310	164	42	216
Total ..	20 410	8 450	..	81 860	2 042	3 505	18 759

Notes—(1) "Total Area Pruned" (column 2) includes pruning to intermediate steps, e.g., 0–2.7 m, 5.5–8.2 m.

(2) "To First Log" (columns 3 and 5) is pruning reaching 4.9–6.1 m. "To Second Log" (columns 4 and 6) is pruning reaching 9.8 m.

(3) Where pruning has gone from below first log up to second log in one operation the area has been included in columns (3) and (4).

APPENDIX 5

State Forest Sanctuaries, Parks, and Recreation and Dedicated Areas 1976–77

(a) *Forest Sanctuaries*

Name	Conservancy	Area (hectares)	First Gazetted
Omahuta	Auckland	6	31/12/51
Waipoua	Auckland	9 105	3/7/52
Erua	Wellington	6	14/2/54
Oapui	Wellington	1	16/2/56
Esk	Wellington	157	23/5/63
Rocky Hills	Wellington	403	12/3/70
Aupouri	Auckland	4	3/12/70
Whirinaki	Rotorua	163	29/4/71
Manaia	Auckland	482	27/8/72
Hikutau	Nelson	849	1/3/73
Hihitahi	Wellington	2 170	22/3/73
Wairahi	Auckland	470	29/3/73
Ngatukituki	Auckland	1 600	29/3/73

Note—Total area at 31 March 1977 is 15 416 ha.

(b) *Forest Parks*

Forest Park	Conservancy	Area (hectares)	First Gazetted
Tararua	Wellington	115 675	14/9/67
Craigieburn	Canterbury	4 452	26/10/67
Kaimanawa	Wellington	74 845	2/10/69
North-west Nelson	Nelson	372 057	10/9/70
Coromandel	Auckland	67 746	5/5/71
Pirongia	Auckland	14 192	20/5/71
Rimutaka	Wellington	14 085	10/8/72
Kaweka	Wellington	64 606	31/1/74
Lake Sumner	Canterbury	73 895	4/7/74
Haurangi	Wellington	15 148	16/12/74
Catlins	Southland	56 557	6/3/75
Kaimai-Mamaku	Rotorua	37 141	23/10/75
Whakarewarewa	Rotorua	3 830	23/10/75
Ruahine	Wellington	90 174	15/1/76
Mt. Richmond	Nelson	175 751	3/3/77

Note—Total area at 31 March 1977 is 1 180 154 ha.

APPENDIX 5—continued

STATE FOREST SANCTUARIES, PARKS, AND RECREATION AND DEDICATED AREAS 1976–77

(c) *Recreation Areas*

Name	Conservancy	Area (hectares)	First Gazetted
Hanmer	Canterbury ..	204	18/6/70
Tairua	Auckland ..	369	15/7/71
Whareorino	Auckland ..	14 733	25/10/73
Pukenui	Auckland ..	592	19/12/73
Great Barrier	Auckland ..	7 247	17/1/74
Ohau	Southland ..	13 636	13/2/75
Eyre	Southland ..	24 889	12/6/75
Snowdon	Southland ..	44 752	12/6/75
Gwavas	Wellington ..	204	8/1/76
Balmoral	Canterbury ..	17	4/3/76
Aupouri	Auckland ..	69	9/3/76
Atuanui	Auckland ..	607	20/5/76

NOTE—Total area at 31 March 1977 is 107 319 ha.

(d) *Dedicated Areas*

Name	Conservancy	Area (hectares)	First Gazetted
Waipoua Kauri Management Area ..	Auckland ..	3 747	18/3/76
Lookout Biological Area	Auckland ..	57	23/3/76
Lake Okaihau Biological Area ..	Auckland ..	12	23/3/76
Hodges Basin Biological Area ..	Auckland ..	25	23/3/76
Coal Seam Hill Biological Area ..	Auckland ..	22	23/3/76
Otahu Biological Area	Auckland ..	396	23/3/76
Pukekura Historic Area	Auckland ..	1	3/2/77
Waitangi Wetlands Area	Auckland ..	159	3/2/77
Rotokuru Ecological Area	Wellington ..	240	3/2/77
Waimangarara Ecological Area ..	Canterbury ..	459	3/2/77
Riverhead Ecological Area ..	Auckland ..	12	10/3/77
Taumatawhero Ecological Area ..	Auckland ..	415	17/3/77
Moehau Ecological Area	Auckland ..	3 634	17/3/77

NOTE—Total area at 31 March 1977 is 9 179 ha.

APPENDIX 6

Total Wood Removals from State Forests for the Year Ended 31 March 1977*

(Volume in thousand cubic metres)

Conservancy	Indigenous			Exotic			Grand Total
	Logs	Smallwood	Total	Logs	Smallwood	Total	
Auckland ..	50	2	52	351	24	375	427
Rotorua ..	88	..	88	2 969	65	3 034	3 122
Wellington ..	23	1	24	99	22	121	145
Nelson ..	61	1	62	197	2	199	261
Westland ..	180	1	181	2	..	2	183
Canterbury ..	..	..	..	464	10	474	474
Southland ..	26	..	26	126	21	147	173
Total—1976–77*	428	5	433	4 208	144	4 352	4 785
1975–76†	526	4	530	3 711	119	3 830	4 360
1974–75†	601	5	606	3 578	151	3 729	4 335

*Provisional.
†Actual.

Notes—(1) This table shows all roundwood removed from State forests under licences, permits, and log sale agreements.
(2) Roundwood for particleboard is included with logs.
(3) Totals may not add due to rounding.

APPENDIX 7

Total Smallwood Removals from State Forests

(Volume in cubic metres)

Category	Year Ended 31 March				
	1972	1973	1974	1975	1976
(1)	(2)	(3)	(4)	(5)	(6)
Posts—					
Indigenous	850	651	701	847	445
Exotic	70 197	87 500	123 646	120 657	79 457
Total	71 047	88 151	124 347	121 504	79 902
Other fencing material—					
Indigenous	425	566	261	434	602
Exotic	4 616	4 163	12 903	15 337	14 545
Total	5 041	4 729	13 164	15 771	15 147
Poles—					
Indigenous	57	–	5	–	–
Exotic	9 401	9 684	9 376	12 358	22 505
Total	9 458	9 684	9 381	12 358	22 505
Other—					
Indigenous	2 067	2 322	2 723	3 212	2 407
Exotic	4 587	2 747	2 649	2 733	2 784
Total	6 654	5 069	5 372	5 945	5 191
Total smallwood—					
Indigenous	3 399	3 539	3 690	4 493	3 454
Exotic	88 801	104 094	148 574	151 085	119 291
Total	92 200	107 633	152 264	155 578	122 745

Note—Chipwood for particle board production is excluded from this table and is included with "logs" in appendix 6.

APPENDIX 8

Total Wood Removals from State Indigenous Forests by Method of Sale for the Year Ended 31 March 1976

(Volume in cubic metres; value in $(000))

Conservancy	Logs		Smallwood		Total	
	Volume	Value	Volume	Value	Volume	Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(a) *Sales of Standing Timber*						
Auckland	45 529	165	355	1	45 884	166
Rotorua	59 721	63	140	..	59 861	63
Wellington	38 353	296	537	1	38 890	297
Nelson	43 852	127	718	1	44 570	128
Westland	164 552	488	1 353	6	165 905	494
Canterbury	..	..	..	..	..	..
Southland	28 804	110	..	..	28 804	110
Total—1975–76	380 811	1,249	3 103	9	383 914	1,258
1974–75	462 950	1,331	4 493	7	467 443	1,338
1973–74	445 052	1,273	3 127	6	448 179	1,279
(b) *Sales of Logs*						
Auckland	26 632	382	..	..	26 632	382
Rotorua	67 094	971	..	..	67 094	971
Wellington	..	..	..	..	..	..
Nelson	27 805	102	319	2	28 124	104
Westland	22 924	295	31	95	22 955	390
Canterbury	..	..	..	..	..	..
Southland	1 080	11	..	..	1 080	11
Total—1975–76	145 535	1,761	350	97	145 885	1,858
1974–75	138 303	1,716	..	..	138 303	1,716
1973–74	125 511	1,555	..	..	125 511	1,555

Notes—(1) Logs include sawlogs, pulplogs and peeler logs.
(2) Values of log sales relate to the value of timber removed and are based on a bush skid or ride price point.

APPENDIX 9

Total Wood Removals from State Exotic Forests by Method of Sale for the Year Ended 31 March 1976

(Volume in cubic metres; value in $(000))

Conservancy	Logs		Smallwood		Total	
	Volume	Value	Volume	Value	Volume	Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(a) *Sales of Standing Timber*						
Auckland ..	191 631	862	15 219	36	206 850	898
Rotorua	1 607 947	2,612	36 352	103	1 644 299	2,715
Wellington ..	92 563	483	22 612	56	115 175	539
Nelson	102 676	152	29	..	102 705	152
Westland	2 094	15	..	..	2 094	15
Canterbury ..	117 092	904	6 205	26	123 297	930
Southland ..	46 825	192	14 683	51	61 508	243
Total—1975–76 ..	2 160 828	5,220	95 100	272	2 255 928	5,492
1974–75 ..	2 141 917	4,888	112 511	284	2 259 428	5,172
1973–74 ..	1 788 542	4,024	117 308	266	1 905 850	4,290
(b) *Sales of Logs*						
Auckland ..	120 888	1,279	5 467	69	126 355	1,348
Rotorua	1 031 037	7,674	12 466	102	1 043 503	7,776
Wellington ..	40	..	..	..	40	..
Nelson	201 309	2,811	..	..	201 309	2,811
Westland	..	..	..	..	..	..
Canterbury ..	132 693	1,353	1 024	5	133 717	1,358
Southland ..	64 412	542	5 233	35	69 645	577
Total—1975–76 ..	1 550 379	13,659	24 190	211	1 574 569	13,870
1974–75 ..	1 435 917	12,681	38 574	333	1 474 631	13,014
1973–74 ..	1 548 802	10,769	31 238	264	1 580 040	11,033

Notes—(1) Logs include sawlogs, pulplogs and peeler logs.
(2) This appendix has been adjusted to exclude any log exports by contractors from standing timber and to include them in the sales of logs.
(3) Values of log sales relate to the value of timber removed and are based on a bush skid or ride price point.

APPENDIX 10

Removals of Exotic Roundwood from State Forests by Thinnings and Clear Fellings

(Volume in cubic metres)

Forest	Year Ended 31 March 1976					1974–75
	Logs		Smallwood		Total	
	Thinnings	Clear Fellings	Thinnings	Clear Fellings		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Athenree	..	6 214	..	..	6 214	5 977
Aupouri	..	2 761	3 088	365	6 214	5 059
Glenbervie	18	7 575	2 305	37	9 935	17 892
Maramarua	320	76 509	1 237	807	78 873	90 284
Omahuta	..	5 941	..	75	6 016	5 791
Puhipuhi	..	5 213	..	68	5 281	5 939
Riverhead	..	92 465	294	3	92 762	88 711
Tairua	41	18 080	..	1 270	19 391	27 657
Waipoua	..	17 993	..	1 351	19 344	22 098
Waitangi	23	9 419	2 226	433	12 101	10 875
Waiuku	3 724	7 571	2 450	433	14 178	17 450
Whangapoua	..	51	..	42	93	318
Woodhill	37 117	6 716	3 404	..	47 237	63 272
Kauaeranga	58	14 710	..	526	15 294	15 927
Others*	..	29	..	272	301	4 421
Kaingaroa	234 738	2 109 983	9 185	37 792	2 391 698	2 348 202
Minginui	..	..	..	..	..	17 175
Patunamu	3 808	..	666	..	4 474	4 722
Rotoehu	15 243	77 861	..	350	93 454	71 956
Waimihia	40 624	122 714	..	..	163 338	105 542
Wairakei	..	..	..	..	..	72 839
Whakarewarewa	7 657	26 356	21	804	34 838	51 703
Esk	890	104	..	190	1 184	837
Gwavas	5 150	23 100	272	779	29 301	25 285
Karioi	2 767	28 010	2 947	3 948	37 672	33 941
Kaweka	..	..	..	..	..	..
Lismore	..	..	159	..	159	77
Mohaka	..	..	..	..	..	68
Ngaumu	334	12 481	6 052	133	19 000	24 287
Santoft	175	..	4 949	..	5 124	4 539
Tangimoana	..	..	845	..	845	599
Te Wera	155	..	190	..	345	52
Tongariro	..	481	..	457	938	1 946
Waitarere	29	18 898	1 274	417	20 618	35 411
North Island	352 871	2 691 235	41 564	50 552	3 136 222	3 179 875
Dumgree	..	658	..	29	687	1 000
Golden Downs	14 691	287 606	..	..	302 297	239 337
Rai-Whangamoa	..	665	..	..	665	..
Others*	241	125	..	..	366	520
Hochstetter	..	..	..	..	..	73
Mahinapua	..	2 094	..	..	2 094	67
Ashley	..	52 364	..	215	52 579	49 755
Balmoral	..	97 569	105	87	97 761	43 336
Eyrewell	..	39 745	204	3 165	43 114	2 208
Hanmer	930	59 112	115	3 208	63 365	34 151
Others*	..	64	2	128	194	517
Beaumont	..	10 874	..	..	10 874	18 710
Berwick	285	6 516	..	1 233	8 034	14 569
Herbert	..	2 962	1 223	642	4 827	1 834
Hokonui	24 172	10 912	2 894	68	38 046	43 418
Longwood	2 611	..	1 536	1 302	5 449	7 002
Naseby	..	4 741	699	3 295	8 735	16 116
West Tapanui	936	43 310	313	5 843	50 402	77 565
Others*	1 721	2 197	850	18	4 786	4 006
South Island	45 587	621 514	7 941	19 233	694 275	554 184
New Zealand	398 458	3 312 749	49 505	69 785	3 830 497	3 734 059

*Includes forests producing less than 280 m^3.

APPENDIX 11

New Zealand Forest Service Sawmilling Operations

(a) *Production of Sawn Timber*

(Volume in cubic metres)

Sawmill	Year Ended 31 December				
	1972	1973	1974	1975	1976
(1)	(2)	(3)	(4)	(5)	(6)
Waipa	110 611	141 807	143 079	122 422	131 488
Conical Hill	24 318	28 691	31 756	26 985	26 588
Total production ..	134 929	170 498	174 835	149 407	158 076

(b) *Sales of Sawn Timber*

(Volume in cubic metres)

Details	Year Ended 31 December				
	1972	1973	1974	1975	1976
(1)	(2)	(3)	(4)	(5)	(6)
New Zealand sales—					
Green	39 524	42 396	40 836	37 356	48 978
Air seasoned	10 849	9 573	2 429	2 287	3 375
Kiln dried	3 370	2 863	1 586	1 294	1 479
Treated—					
Wet	30 910	45 259	56 090	49 938	52 117
Dry	5 686	6 500	7 813	1 945	3 339
Total	90 339	105 591	108 754	92 820	109 288
Export sales—					
Green	42 307	43 842	36 366	22 393	27 407
Air seasoned	290	182	595	740	88 055
Kiln dried	1 189	2 101	1 340	1 156	7 140
Treated	1 578	4 106	4 959	1 712	908
Total	45 364	50 231	43 260	26 001	43 510
Transfers to box factory ..	2 854	3 705	12 985	10 099	16 711
Grand total ..	138 557	159 527	164 999	128 920	169 509

(c) *Subsidiary Processing of Sawn Timber Year Ended 31 March 1976.*

	Cubic Metres
Quantity kiln dried	29 526
Quantity dressed	76 108
Quantity preservative treated* ..	55 597

*For further details see appendix 12.

APPENDIX 12

Forest Produce Treated

(a) *Sawn Timber Treated by the New Zealand Forest Service*

(Volume in cubic metres)

Location of Plant and/or Year	Preservative				Total
	Boron	Tanalith	Boliden	PCP*/ Fuel Oil	
(1)	(2)	(3)	(4)	(5)	(6)
Waipa	30 268	..	12 799	181	43 248
Conical Hill	8 516	3 833	..	..	12 349
Total, year ended 31 December—					
1976	38 784	3 833	12 799	181	55 597
1975	40 617	4 362	14 730	360	60 069
1974	62 402	4 244	15 918	219	82 783
1973	59 184	..	12 549	375	72 108
1972	31 061	..	10 321	222	41 604

*Pentachlorophenol.

(b) *Other Timber Treated by the New Zealand Forest Service*

Type and Year	Conical Hill	Waipa		Total	
	Tanalith	Boliden	PCP*/ Fuel Oil	Quantity	Volume
(1)	(2)	(3)	(4)	(5)	(6)
	(Quantities in thousands)				(cubic metres)
Poles	6.0	55.0	12.5	18.6	5 379
Stockyard posts	..	..	0.7	0.7	340
Fencing posts	31.2	181.5	73.1	285.8	7 326
Strainers	2.1	17.1	0.6	20.4	1 548
Stays	..	..	0.9	0.9	27
Sawn battens	27.1	233.1	..	260.2	844
Sleepers†	2.5	1.7	83.6	87.8	5 682
Other	..	2.5	6.8	9.3	803
			(Volume in cubic metres)		
Total, year ended December—					
1976	2 032	8 176	11 741	N.A.	21 949
1975	2 826	8 042	11 465	N.A.	22 333
1974	1 523	7 220	11 441	N.A.	20 184
1973	1 472	6 201	10 081	N.A.	17 754
1972	2 095	5 720	15 263	N.A.	23 078

*Pentachlorophenol. †Excluding rejects.

(c) *Total Forest Produce Treated in New Zealand (Forest Service and Private)*

Year	Number of Plants	Treated Sawn Timber m^3	Other Treated Timber—Poles, Sleepers, etc. m^3	Percentage of Total Sawn Timber Treated
1975–76	282	930 096	329 823	46.9
1974–75	264	958 378	280 066	46.0
1973–74	262	939 636	237 685	45.7
1972–73	265	768 652	246 066	43.0
1971–72	270	662 924	273 306	37.9

Source—Department of Statistics.

APPENDIX 13

Employment and Training

(a) *Staff and Labour*

Category	Strength, 31 March 1976	Commenced During Year	Left During Year	Strength, 31 March 1977
(1)	(2)	(3)	(4)	(5)
Staff	3 073	348	390	3 031*
Labour—				
Thinning, logging, milling ..	1 026	784	831	979
Other forestry operations ..	2 493	3 737	3 577	3 653
Control of noxious animals ..	265	257	267	255
Cadet woodsmen	59	60	12	48
Total	3 843	4 838	4 687	4 935
Total staff and labour	6 916	5 186	5 077	7 966

(b) *Training*

Category	Year Ended 31 March		
	1975	1976	1977
(1)	(2)	(3)	(4)
Forestry trainees recruited during year† ..	..	40	28
Forester trainees—			
Recruited during year	16	11	6
Studying for degrees in New Zealand ..	49	31	35
Ranger trainees—			
Recruited during year	22	..	..
Under field training	90	73	82
At ranger schools	27	27	..
Research technicians—			
Recruited during year	16	..	..
Under training	25	16	..
Woodsmen—			
Recruited during year	99	60	48
At woodsmen schools	179	140	101
Clerical cadets—			
Recruited	41	32	31

*Includes employees on leave without pay and part-time workers.
†From 1977 onwards forester and ranger trainees will be selected from the forestry trainees recruited in the previous year.

REPORT OF THE AUDIT OFFICE

To the Director-General of Forests.

The Audit Office, acting under statutory authority, has audited the accounts of the Commercial Division, New Zealand Forest Service, for the year ended 31 December 1976.

The audit included such reviews of the accounting procedures and tests of the accounting records and other supporting evidence as were considered necessary in terms of section 20, Public Revenues Act 1953. All the information and explanations required have been obtained. The financial transactions which have come under notice have been within statutory authority.

In the opinion of the Audit Office the attached balance sheet and accompanying accounts give a true and fair view of the state of affairs of the Commercial Division as at 31 December 1976 and of the results of the financial operations for the year.

G. H. Rush, Assistant Controller and Auditor-General.
4 July 1977.

APPENDIX 14

New Zealand Forest Service Commercial Division
Consolidated Accounts for the Year Ended 31 December 1976

A. Operating Account

Year Ended 31 December 1975			Year Ended 31 December 1976	
$	*$*		$	$
	11,554,746	Gross value of production		17,043,049
		Less—		
3,472,309		Cost of logs (note 1)	4,804,566	
4,056,690		Manufacturing expenses (note 2)	6,018,600	
1,538,418		Selling and distribution expenses (note 3)	3,175,956	
1,544,881		Administration and financial expenses (note 4)	1,859,195	
	10,612,298			15,858,317
	942,448	Operating profit		1,184,732
	97,253	*Less* net expenditure on employee accommodation (note 5)		74,633
	845,195	Profit before income tax		1,110,099
330,000		Income tax paid	250,000	
		Provision for income tax	100,000	
	330,000			350,000
	$515,195	Profit for year		$760,099

B. Profit and Loss Appropriation Account

Year Ended 31 December 1975			Year Ended 31 December 1976	
$	*$*		$	$
	515,195	Net profit from operating account		760,099
	99,093	Plus profit on sale and disposal of assets		2,408
	614,288	Tax paid profit		762,507
		Less—		
34,715		Appropriation to fire insurance reserve	25,000	
433,922		Proposed dividend	557,580	
6,330		Provision for doubtful debts		
	474,967			582,580
	139,321	Retained profits		179,927
	5,200,631	Plus balance 1 January		5,386,925
	5,339,952			5,566,852
(P)	*46,973*	Adjustments relating to previous year (note 7)	(L)	77,323
	$5,386,925			$5,489,529

C. Balance Sheet

Year Ended 31 December 1975			Year Ended 31 December 1976	
$	*$*		*$*	*$*
		Funds employed—		
	5,538,482	Advances of Government funds		8,733,028
	5,386,925	Accumulated profits		5,489,529
		Represented by the following notional capital apportionment—		
1,627,083		Bank overdraft	2,274,412	
3,099,441		Term finance	3,982,715	
3,099,441		Accumulated profits and reserves	3,982,715	
3,099,442		Share capital	3,982,715	
	10,925,407			14,222,557
	500,000	Reserve for fire losses		524,775
	$11,425,407	Total funds employed		$14,747,332
		Current assets—		
2,082,178		Sundry debtors and prepayments (note 7)	3,580,359	
5,010,709		Stocks and stores (note 8)	5,890,632	
	7,092,887			9,470,991
		Fixed assets at cost less depreciation (note 9)—		
3,500,010		Plant, equipment, and tools	3,956,638	
972,847		Buildings	1,482,330	
438,860		Houses and employee accommodation	435,078	
12,857		Furniture and fittings	11,045	
880,804		Other installations	1,099,553	
	5,804,878			6,984,644
	12,897,765			16,455,635
		Less—		
1,038,436		Current liabilities	1,050,723	
433,922		Provision for dividend	557,580	
..		Provision for taxation	100,000	
	1,472,358			1,708,303
	$11,425,407			$14,747,332

The notes that follow form part of and are to be read in conjunction with these accounts.

M. J. Conway, Director-General.
A. A. B. Webby, Director, Commercial Division.

D. Notes on the Accounts

1. *Cost of Logs*

Expenses of logs to mills and other roundwood extracted under contract to delivery point, after adjusting for opening and closing stock. Average cost of logs at point of purchase for all supplies, both clear fellings and thinnings, as follows:

	$ per m^3
Waipa—	
Purchase of logs on stump	3.01
Purchase of logs on ride	9.18
Conical Hill—	
Purchase of logs at mill site	12.14

2. *Manufacturing Expenses*

Expenses of manufacturing and processing into finished products in mill yard.

3. *Selling and Distribution Expenses*

Direct wages and salaries of sales staff and yard staff involved in preparing finished products for sale, together with all expenses from mill to point of sale.

4. *Administration and Financial Expenses*

	1976	1975	1974
	$	$	$
Includes:			
Interest paid	295,021	210,984	175,841
Audit fee	4,184	1,954	1,778

5. *Net Expenditure on Employee Accommodation*

Excess of direct outgoings over actual rents, determined by agreement, between the State Services Commission and the Combined State Services Organisation and the New Zealand Timber Workers Union.

6. *Adjustments Relating to Previous Years*

	$
Income tax underprovided 1975	2,811
Annual log price review	20,703
Corsican pine sawlogs ex Whaka	57,037
	80,551
Special employment wages 1975	3,228
	77,323

7. *Sundry Debtors*

Is the net amount after deducting the following:

	1976	1975	1974
	$	$	$
Provision for doubtful debts ..	114,000	114,000	153,679
Provision for discounts	25,939	14,091	10,497

8. *Stocks and Stores*

This item comprises:

	1976	1975	1974
	$	$	$
Log and timber stocks ..	4,725,387	3,931,877	2,301,498
General stores	1,165,245	1,078,832	738,914

9. *Fixed Assets*

	Original Cost at 31 December 1976	Cumulative Depreciation to 31 December 1976	Addition	Deletion
	$	$	$	$
Plant, equipment, and tools ..	8,414,511	4,457,873	1,280,823	151,238
Buildings	2,241,965	759,635	320,350	
Houses and employee accommodation	845,691	410,613	3,890	
Furniture and fittings	32,555	21,510	734	
Other installations	1,444,719	345,166	165,135	
	$12,979,441	$5,994,797	$1,770,932	$151,238

Depreciation provided in 1976 was $571,340; in 1975, $673,118; in 1974, $517,930.

E. Source and Application of Funds

	1976	1975	1974
	$	$	$
Source of funds—			
Net funds from operations	1,254,116	1,228,956	2,096,347
Increases in advances from Government	3,194,546	2,547,503	274,493
Proceeds from sale of fixed assets ..	22,009	367,930	26,480
Increase current liabilities	112,287	..	274,176
	$4,582,958	$4,144,389	$2,671,496
These funds were applied in—			
Acquisition of fixed assets	1,770,932	1,695,572	1,190,080
Increase in current assets	2,378,104	2,003,215	1,236,499
Decrease in current liabilities ..	..	106,958	..
Payment of dividend	433,922	338,644	244,917
	$4,582,958	$4,144,389	$2,671,496
Net funds from operations—			
Net profit from operating account ..	760,099	515,195	1,593,879
Adjustment relating to previous year	77,323(L)	46,973(P)	15,462(L)
Depreciation	571,340	673,118	517,930
	1,254,116	1,235,286	2,096,347
Less provision for doubtful debts ..	..	6,330	..
	$1,254,116	$1,228,956	$2,096,347

F. Highlights

	1976	1975	1974
Gross value of production ($000)	17,043	11,555	13,322
Production (m^3)	158,076	149,407	174,801
Total personnel employed	936	920	873
Total remuneration to employees ($000) ..	6,303	5,380	4,905
Tax paid profit $	762,507	614,288	1,593,879
Proposed dividend $	557,580	433,922	338,644
Retained profits $	179,927	139,321	1,211,366
Percentage of profits retained	24	23	76
Total assets ($000)	16,456	12,898	10,150
Working capital ($000)	5,488	3,994	2,671
Total funds employed ($000)	14,747	11,425	8,666

G. Statistics

	1976	1975	1974
Dividend rate (percent)	14	14	14
Number of times covered by profit	1.4	1.4	4.7
Tax paid profit to—			
(a) Shareholders funds (percent) ..	9.57	8.31	32.9
(b) Gross sales (percent)	4.47	4.46	11.9
(c) Share capital (percent)	19.15	16.62	65.9
(d) Total funds employed (percent) ..	5.17	4.51	18.4
Current assets to—			
(a) Current liabilities	2.4:1	2.3:1	2.4:1
(b) Stocks	1.6:1	1.4:1	1.7:1

H. Statement of Accounting Policies

The general accounting principles appropriate for measurement and reporting of profit and loss under the historical cost method as recommended by the New Zealand Society of Accountants Statement of Standard Accounting Practice No. 1 have been adopted.

The following particular accounting principles which materially affect the measurement of profit and financial position have been applied.

1. *Basis of Consolidation*

The accounts of Conical Hill sawmill have been consolidated with those of Waipa sawmill. All significant inter-mill transactions have been eliminated.

2. *Notional Capital*

The operating accounts and balance sheet of the Commercial Division conform with the accounts of a public company except that in the balance sheet a notional capital structure is shown.

The notional capital is necessary because Commercial Division expenditure is funded from the public account and all revenue earned is credited to the public account. This approach permits a comparison of the results achieved by the Commercial Division with those of other companies in the timber industry.

The notional capital apportionment is based on Reserve Bank statistics applying to a group of companies engaged in business similar to that of the Commercial Division. Currently this allows the following apportionment of the items, advances of Government funds and accumulated profits:

25 percent: Bank over-draft with the proviso that actual current liabilities are deducted.
25 percent: Term finance.
25 percent: Accumulated profits and reserves.
25 percent: Share capital.

3. *Fixed Assets and Depreciation*

Depreciation of fixed assets has been based on rates and bases allowed by the Inland Revenue Department. In the case of major assets this represents:

(a) Machinery on diminishing value of assets at 15 percent per annum.
(b) Mobile plant on diminishing value of assets at 20 percent per annum.
(c) Buildings depreciated on straight line basis at 2½ percent per annum of original cost.

There are other minor assets attracting depreciation rates varying from 5 percent to 50 percent on the diminishing value of the assets.

4. *Inventory Valuation*

The following methods have been used for the valuation of inventories:

(a) Log stocks: Cost landed at gantry ($85,216).
(b) Manufactured timber products and roundwood: Cost of production including all direct and indirect costs of operating the mills and all expenses of Commercial Division, Head Office in Rotorua ($4,326,668).

(c) Retail timber stocks: At wholesale purchase prices ($143,448).
(d) Stores: At cost into stores ($1,165,245).
(e) Wood chips: Market price at point of sale ($170,055).

5. *Provision for Doubtful Debts*

An allowance on accounts receivable based on past experience is made in respect of doubtful accounts. Bad debts have been charged to profit and loss.

6. *Repairs and Maintenance*

Expenditure for maintenance, repairs, and replacements are charged to expense. Expenditure for modification and betterment of the relevant asset which materially increases the value of that asset has been capitalised.

7. *Income Tax*

Provision is made for company taxation on income after taking advantage of all concessions, including export market development, export incentive, and regional and investment allowances.

8. *Foreign Currencies*

Foreign currency transactions are converted to New Zealand currency at the rate of exchange ruling on the date of the transaction.

REPORT OF THE AUDIT OFFICE

To the Director-General of Forests.

The Audit Office, acting under statutory authority, has audited the accounts of the New Zealand Forest Service for the year ended 31 December 1976.

The audit included such reviews of the accounting procedures and tests of the accounting records and other supporting evidence as were considered necessary in terms of section 20, Public Revenues Act 1953. All the information and explanations required have been obtained. The financial transactions which have come under notice have been within statutory authority.

In the opinion of the Audit Office the attached balance sheet and accompanying accounts give a true and fair view of the state of affairs of the Forest Service as at 31 December 1976 and of the results of the financial operations for the year.

G. H. Rush, Assistant Controller and Auditor-General.

4 July 1977.

APPENDIX 15

New Zealand Forest Service Accounts for the Year Ended 31 December 1976
(excludes Commercial Division)

General Administration Account (Note 1)

Year Ended 31 December 1975			Year Ended 31 December 1976	
$	*$*		*$*	*$*
		Direct charges on—		
240,499		Establishment, tending, and protection in amenity protection forests (net)	278,488	
272,682		Fire prevention and administration of fire districts (note 2)	161,588	
5,123,371		Technical investigations research, etc.	5,565,510	
766,544		Assistance to public and private forestry	419,497	
188,823		Timber inspection and termite control	222,889	
1,571,033		Noxious animal control (note 2)	1,500,331	
530,955		Work for other departments	700,012	
635,479		Staff training	664,985	
9,329,386			9,513,300	
506,383		*Less* miscellaneous recoveries	309,532	
	8,823,003			9,203,768
		General administration charges—		
6,903,970		Staff expenses (note 3)	7,916,496	
1,111,006		Office expenses (note 4)	1,494,517	
1,505,885		Maintenance and depreciation	1,649,387	
512,205		Miscellaneous general expenses	811,421	
10,033,066			11,871,821	
4,036,042		*Less* overhead recoveries from production forests and Commercial Division	4,733,519	
	5,997,024			7,138,302
	14,820,027			16,342,070
	661,646	*Less* miscellaneous revenue (note 5)		877,874
	14,158,381	Net deficit for year		15,464,196
	7,569,070	Plus previous years' adjustment (note 6)		1,208,855
	$21,727,451	Total deficit transferred to balance sheet		$16,673,051

Income and Expenditure Accounts: Forests in Production

Year Ended 31 December 1975					Year Ended 31 December 1976			
Exotic		*Indigenous*			Exotic		Indigenous	
$	*$*	*$*	*$*		$	$	$	$
				Income from—				
17,391,977		*1,857,111*		Sales of logs	27,464,451		1,881,580	
2,271,464		*1,281,499*		Sales of standing timber	2,116,413		1,231,813	
889,144		*13,990*		Miscellaneous revenue	114,166		23,171	
20,552,585		*3,152,600*			29,695,030		3,136,564	
9,663,667		*1,693,608*		*Less* expenditure on utilisation	16,028,721		1,651,695	
	10,888,918		*1,458,992*	Net income from sales		13,666,309		1,484,869
				Less expenditure on forest management—				
2,433,588		*127,673*		Establishment	2,668,481		133,202	
2,003,840		*2,065*		Tending	2,003,916		7,447	
1,074,859		*45,550*		Protection	1,157,760		54,824	
5,836,615		*960,283*		Maintenance of assets, depreciation, and miscellaneous expenditure	6,679,643		1,055,204	
1,080,283		*117,633*		Personnel oncost (note 7)	1,138,668		155,612	
	12,429,185		*1,253,204*			13,648,468		1,406,289
	$1,540,267(D)		*$205,788*	Surplus for year transferred to balance sheet		$17,841		$78,580

Forest Development Account: Developing Forests

Year Ended 31 December 1975			Year Ended 31 December 1976	
$	$		$	$
		Expenditure on continuing development—		
5,738,839		Establishment	6,006,867	
2,354,578		Tending	2,751,491	
585,548		Protection	793,656	
5,582,075		Maintenance of assets, depreciation, and miscellaneous expenditure	6,139,733	
1,335,106		Personnel oncost (note 7)	1,551,660	
	15,596,146	Total expenditure		17,243,407
		Income from—		
373,502		Sales of logs	423,955	
595,170		Sales of standing timber	523,928	
109,101		Miscellaneous revenue	63,611	
1,077,773			1,011,494	
303,535		*Less* expenditure on utilisation	331,494	
	774,238	Net income from sales		680,000
	$14,821,908	Net costs for year transferred to balance sheet		$16,563,407

Balance Sheet

Year Ended 31 December 1975			Year Ended 31 December 1976	
$	$		$	$
		Source of funds—		
174,811,719		Advances from Government	195,940,891	
		Less deficit—		
21,727,451		General administration account	16,673,051	
	153,084,268			179,267,840
		Accumulated surpluses and reserves—		
		Excess of income—		
	205,788	Indigenous production forests		284,368
	$153,290,056			$179,552,208
		Employment of funds—		
69,846,914		Land, buildings, roads, plant etc. (note 8)	80,177,641	
73,152,607		Forest assets (note 9)	88,042,029	
	142,999,521	Total fixed assets		168,219,670
	1,818,292	Forestry encouragement loans		2,192,038
		Current assets—		
6,496,348		Debtors	7,945,901	
2,235,444		Stocks and stores	2,889,324	
209,084		Deposits held	229,678	
8,940,876			11,064,903	
2,008,900		*Less* creditors (note 10)	3,446,829	
	6,931,976			7,618,074
		Accumulated deficit—		
	1,540,267	Exotic production forests		1,522,426
	$153,290,056			$179,552,208

The notes that follow form part of and are to be read in conjunction with these accounts.

M. J. Conway, Director-General.
D. J. Leahy, Chief Finance Officer.

Notes to the Accounts

1. *General Administration Account*

Net operating expenses of the department's general government function.

2. *Fire Prevention and Noxious Animals Control*

Expenditure on non-production areas only. Costs in production forests are charged to those units.

3. *Staff Expenses*

Salaries, overtime, travelling, and general expenses of staff.

4. *Office Expenses*

Postages, stationery, and general office expenses.

5. *Miscellaneous Revenue*

Includes $295,021 interest and $433,922 dividends paid by the Commercial Division.

6. *Previous Years' Adjustment*

Further expenditure since inception to 31 December 1974 formerly capitalised in the Forest Development and Management Account as "Net costs of development and management" for units which are now considered more correctly a charge to general administration. Details are:

	$
Administration expenses—	
Personnel	120,992
Office expenses	13,014
Maintenance and depreciation	cr110,319
Assistance to public and private forestry	..
Miscellaneous general expenses	364,879
	388,566
Add miscellaneous revenue overstated	617,392
	1,005,958
Direct expenditure on fire protection and prevention	20,037
	1,025,995
Add net income from amenity and protection forests overstated	182,860
	$1,208,855

7. *Personnel Oncost*

Holiday pay and accident compensation levy for all personnel and wet time and sick leave for wage workers.

8. *Land, Buildings, etc.*

	Land and Buildings	Roads and Bridges	Plant and Vehicles	Other Assets	Total
	$	$	$	$	$
Original cost at 31 December 1975 ..	32,815,161	28,538,171	15,203,734	6,614,925	83,171,991
Net additions and disposals ..	3,923,661	3,259,500	3,619,568	949,301	11,752,030
Original cost at 31 December 1976 ..	36,738,822	31,797,671	18,823,302	7,564,226	94,924,021
Depreciation—					
Accumulated at 31 December 1975	4,632,137	140,329	8,267,175	285,436	13,325,077
Adjustment for year	400,767	16,223	963,858	40,455	1,421,303
Accumulated at 31 December 1976	5,032,904	156,552	9,231,033	325,891	14,746,380
Net balance sheet values—					
At 31 December 1975	28,183,024	28,397,842	6,936,559	6,329,489	69,846,914
At 31 December 1976	31,705,918	31,641,119	9,592,269	7,238,335	80,177,641

9. *Forest Assets*

Net expenditure on tree crop at historical values up to 31 December 1974, plus net costs of category (c) forests since 1 January 1975. Balance of notional interest has also been written out of the accounts. Details are:

	$	$
Net costs as at 1 January 1976		73,152,607
Plus net costs for year		16,563,407
		89,716,014
Less notional interest written off ..	465,130	
Less previous years' adjustment	1,208,855	
		1,673,985
		$88,042,029

10. *Creditors*

Includes $229,678 for deposits held on contracts.

Statement of Accounting Policies

General Accounting Principles

The general accounting principles recommended by the New Zealand Society of Accountants for the measurement and reporting of the financial position on a historical cost basis have been followed.

Classification of Forests

Up to 31 December 1974 the greater part of the exotic forest estate was regarded as being in the developmental stage for accounting purposes and net expenditure was capitalised. Since 1 January 1975, forests (and their expenditure and revenue) have been classified as follows:

(a) Exotic production—Forests which are producing wood from the greater part of the potential productive area of the forest.

(b) Indigenous production—Indigenous forests being managed for the production of native timbers.

(c) Developing exotics—Forests which are under development and are not producing wood from a significant part of the potential productive area of the forest.

(d) Other—Expenditure within amenity and protection areas and on those functions of administrative units which are unrelated to the role of production forestry.

Capital Expenditure

Capitalisation of expenditure on exotic and indigenous production forests ceased with effect from 1 January 1975. From this date, in both groups, operational expenses have been related to earnings in the income and expenditure account, to show the year's surplus or deficit.

The net costs of developing exotic forests are capitalised in the Forest Development Account and transferred to the balance sheet as forest assets. All expenditure on other fixed assets is capitalised.

Accumulated Surplus and Deficit

The accumulated surplus and deficit represent the net balance of revenue and expenditure for exotic and indigenous production forests since 1 January 1975. Development expenditure on forest assets for production forests is a charge to income.

Depreciation

All assets on which depreciation is provided are written off by reference to capitalised historic cost and the estimated useful working life of each type of asset allowing for a nominal residual value for some assets.

Depreciation on major assets is:

Buildings	1 percent to 2½ percent according to construction on a straight line basis.
Bridges	2½ percent on straight line basis.
Fire equipment	10 percent on diminishing value.
Plant, vehicles, radio installations	20 percent on diminishing value.
Power saws	50 percent on diminishing value.

Forestry Encouragement Loans

The amount represents advances made less repayments. Approximately half only is repayable in terms of the Forestry Encouragement Loans Regulations 1967.

Debtors

These are recorded at expected realisable value.

Research

Technical research is written off through the General Administration Account under technical investigations, research, etc., in the year in which expenditure is incurred.

APPENDIX 16

Production of Rough Sawn Timber for the Year Ended 31 March 1976

(a) *By Species*

(Volume in cubic metres)

Conservancy	Indigenous								Exotic				All Species			Sawmills Registered
	Rimu and Miro	Matai	Totara	Kahikatea	Kauri	Tawa	Beech	Minor Species	Exotic Pines	Douglas Fir	Eucalyptus	Minor Species	Indigenous	Exotic	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Auckland	26 504	10 182	1 321	1 959	1 217	8 338	..	1 293	195 539	24	765	3 673	50 814	200 001	250 815	105
Rotorua	50 666	2 969	824	2 325	..	11 307	35	963	750 305	123 342	8 635	23 721	69 089	906 003	975 092	46
Wellington ..	36 648	6 267	3 442	5 674	2	1 360	103	427	200 117	6 963	246	5 812	53 923	213 138	267 061	81
Nelson	29 871	25	6	2 068	..	..	4	2	64 247	10 740	53	497	35 210	75 537	110 747	59
Westland	113 110	170	256	19 584	..	..	3 234	1 260	1 086	..	..	..	134 482	1 086	135 568	24
Canterbury	..	..	1	..	..	..	..	102	131 365	3 321	467	1 766	1	136 919	136 920	59
Southland	8 914	43	74	527	..	..	20 994	10	84 814	9 383	65	2 292	30 562	96 554	127 116	44
North Island—																
1975–76 ..	113 818	19 418	5 587	9 958	1 219	21 005	138	2 683	1 145 961	130 329	9 646	33 206	173 826	1 319 142	1 492 968	232
1974–75 ..	114 811	16 877	8 075	10 051	1 422	9 298	102	1 806	1 262 272	127 777	2 125	25 093	162 442	1 417 267	1 579 709	220
1973–74 ..	132 387	16 296	6 568	9 879	2 167	10 731	4 208	2 731	1 185 008	157 943	4 577	16 935	184 967	1 364 463	1 549 430	231
South Island—																
1975–76 ..	151 895	238	337	22 179	..	4	25 488	114	281 512	23 444	585	4 555	200 255	310 096	510 351	186
1974–75 ..	156 741	269	111	18 847	..	..	27 137	397	279 479	19 562	979	2 386	203 504	302 406	505 910	166
1973–74 ..	155 856	838	278	16 564	2	..	22 712	177	285 334	19 209	384	3 861	196 487	308 788	505 275	186
New Zealand—																
1975–76 ..	265 713	19 656	5 924	32 137	1 219	21 009	25 626	2 797	1 427 473	153 773	10 231	37 761	374 081	1 629 238	2 003 319	418
1974–75 ..	271 552	17 146	8 186	28 898	1 422	9 298	27 241	2 203	1 541 751	147 339	3 104	27 479	365 946	1 719 673	2 085 619	386
1973–74 ..	288 243	17 134	6 846	26 443	2 169	10 731	26 980	2 908	1 470 342	177 152	4 961	20 796	381 454	1 673 251	2 054 705	417

NOTE—(1) This table is based on statistics collected by the New Zealand Forest Service in connection with the annual registration of sawmills.

(2) Indigenous "Minor Species" (column 9) for 1975–76 include taraire, 393 cubic metres, tanekaha, 470 m^3, hinau, 160 m^3, rewarewa, 541 m^3, puriri, 31 m^3, other and unspecified, 1 202 m^3.

(3) Exotic "Minor Species" (column 13) for 1975–76 include—larch, 22 977 m^3, macrocarpa, 13 340 m^3, poplar, 364 m^3, redwood 825 m^3, other and unspecified, 255 m^3.

(4) This table includes the production of sawn sleepers 71 053 m^3 as produced in 1975–76.

APPENDIX 16—continued

PRODUCTION OF ROUGH SAWN TIMBER FOR THE YEAR ENDED 31 MARCH 1976—*continued*

(b) *By Land Ownership*

(Volume in cubic metres)

Conservancy	Indigenous					Exotic				Grand Total
	State Forest Land	Unoccupied Crown Land	Maori Land	Private Land and Crown Leasehold	Total	State Forest Land	Local Authority Land	Company and Private Land	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Auckland ..	29 997	67	3 166	17 584	50 814	148 613	566	50 822	200 001	250 815
Rotorua ..	37 935	..	16 690	14 464	69 089	416 436	360	489 207	906 003	975 092
Wellington ..	23 565	..	6 148	24 210	53 923	107 305	13 082	92 751	213 138	267 061
Nelson ..	28 024	..	..	7 186	35 210	32 212	2 919	40 406	75 537	110 747
Westland ..	95 954	7 791	2 924	27 813	134 482	1 028	..	58	1 086	135 568
Canterbury ..	..	..	..	1	1	56 538	30 035	50 346	136 919	136 920
Southland ..	14 245	..	13 596	2 721	30 562	62 704	9 764	24 086	96 554	127 116
North Island—	91 497	67	26 004	56 258	173 826	672 354	14 008	632 780	1 319 142	1 492 968
1975–76 ..	103 352	..	16 104	42 986	162 442	759 274	16 358	641 635	1 417 267	1 579 709
1974–75 ..	97 110	..	29 301	58 556	184 967	633 379	19 345	711 739	1 364 463	1 549 430
1973–74 ..										
South Island—	138 223	7 791	16 520	37 721	200 255	152 482	42 718	114 896	310 096	510 351
1975–76 ..	136 728	7 656	19 456	39 664	203 504	141 968	41 999	118 439	302 406	505 910
1974–75 ..	134 704	11 996	17 293	32 494	196 487	151 773	63 144	93 871	308 788	505 275
1973–74 ..										
New Zealand—	229 720	7 858	42 524	93 979	374 081	824 836	56 726	747 676	1 629 238	2 003 319
1975–76 ..	240 080	7 656	35 560	82 650	365 946	901 242	58 357	760 074	1 719 693	2 085 619
1974–75 ..	231 814	11 996	46 594	91 050	381 454	785 152	82 489	805 610	1 673 251	2 054 705
1973–74 ..										

APPENDIX 17

Production of Pulp and Paper in New Zealand

(Quantity in tonnes)

Year Ended 31 March	Wood Pulp			Fibreboard	Paper and Paperboard		
	Mechanical	Chemical*	Total		Newsprint	Other Paper and Paperboard	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1976 ..	387 736	565 376	953 112	43 981	219 134	335 820	554 954
1975 ..	371 618	521 161	892 779	43 879	208 523	338 311	546 834
1974 ..	351 058	465 300	816 358	45 968	217 831	316 304	534 135
1973 ..	260 543	339 502	600 045	44 730	213 231	240 226	453 457
1972 ..	262 627	317 998	580 625	45 526	218 021	250 766	468 787
1971 ..	258 948	317 074	576 022	44 354	213 917	247 965	461 882
1970 ..	244 980	316 888	561 868	40 188	207 413	238 585	445 998
1969 ..	234 682	259 093	493 775	38 903	202 732	193 043	395 775
1968 ..	224 709	256 494	481 203	33 606	198 685	178 755	377 440
1967 ..	208 641	227 453	436 094	33 406	186 837	173 170	360 007

*Includes semi-chemical pulp.

APPENDIX 18

ESTIMATED NEW ZEALAND PRODUCTION OF FOREST PRODUCTS IN ROUNDWOOD EQUIVALENT AND ACTUAL ROUNDWOOD REMOVALS FOR THE YEAR ENDED 31 MARCH 1976

(Volume in thousand cubic metres)

Category (1)	Indigenous Wood (2)	Exotic Wood (3)	Total (4)
Logs for export	0.5	613.5	614.0
Chips for export	34.8	398.2	433.0
Sawn timber	748.2	3 894.0	4 642.2
Pulp and pulp products	131.5	3 699.4	3 830.9
Peelers, veneer, and plywood	28.6	33.9	62.5
Smallwood and miscellaneous	16.0	350.0	366.0
Total (roundwood equivalent)	959.6	8 989.0	9 948.6
Less waste used in pulp production—			
Sawmill residues	..	1 269.1	1 269.1
Wastepaper	..	132.0	132.0
Sawmill residues used in export chip production	..	243.6	243.6
Total roundwood removed—			
1975–76	959.6	7 344.3	8 303.9
1974–75	1 002.7	7 397.5	8 400.2
1973–74	917.2	7 659.9	8 577.1
1972–73	889.1	7 353.8	8 242.9
1971–72	948.6	7 016.9	7 965.5

NOTE—(1) Smallwood and miscellaneous is estimated. Total derived from recorded production in State forests and estimated additional production in private forests using an area basis.
(2) Firewood is excluded.
(3) Wastepaper does not include broke or trimmings from producers' own machines.

APPENDIX 19

External Trade of New Zealand in Forest Products

(a) *Imports of Timber*

Calendar Year	Sawn Timber							Total Sawn Timber	Sleepers	Logs and Poles
	Hardwoods			Softwoods						
	Australian	Oak	Other	Douglas Fir	Redwood	Cedar	Other			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
					(Volume in cubic metres)					
1975 ..	4 607	609	8 846	2 504	2 572	1 858	1 539	22 575	..	5 781
1974 ..	8 190	1 341	33 638	4 590	13 537	13 015	2 387	76 698	..	26 925
1973 ..	6 374	120	12 817	4 260	14 351	8 229	2 414	48 565	..	9 146
1972 ..	10 672	201	7 033	2 445	4 526	6 256	1 867	33 000	..	12 459
1971 ..	10 008	42	10 034	3 672	1 944	7 610	866	34 179	..	12 544
					(Value in $(000))					
1975 ..	832	136	998	266	424	253	227	3,136	..	577
1974 ..	930	151	4,551	603	1,886	2,136	327	10,584	1	422
1973 ..	614	19	1,345	501	1,959	1,282	244	5,964	..	399
1972 ..	757	28	555	208	479	559	166	2,752	4	432
1971 ..	773	9	826	256	197	630	79	2,770	4	474

(b) *Exports of Timber*

Calendar Year	Indigenous			Exotic					Total Sawn Timber	Sleepers	Logs and Poles	Chips
	Beech	Other	Total	Radiata Pine		Douglas Fir	Other	Total				
				Sawn	Cases							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						(Volume in cubic metres)						b.d.u.*
1976	1 701	4 565	6 266	171 592	504	49 376	10 007	231 479	237 745	..	986 006	131 595
1975	1 348	2 616	3 964	119 049	542	32 580	5 019	157 190	161 154	..	549 294	148 962
1974	1 457	2 899	4 355	164 406	1 867	44 503	9 731	220 507	224 863	..	1 205 336	148 911
1973	2 624	3 957	6 591	171 763	1 385	61 900	13 938	248 991	255 582	..	1 784 013	96 267
1972	2 348	4 300	6 648	150 764	2 947	67 437	12 414	233 531	240 180	..	1 855 826	89 441
1971	2 473	5 873	8 346	216 683	2 872	63 283	12 764	295 602	303 948	16	1 821 194	85 466
						(Value in $(000))						
1976	195	569	764	10,730	69	3,860	964	15,623	16,387	..	27,190	6,017
1975	132	360	492	6,574	55	2,539	362	9,530	10,022	2	13,571	6,005
1974	132	329	461	8,628	161	3,275	554	12,618	13,079	..	30,145	4,862
1973	130	396	576	7,426	88	4,119	582	12,215	12,791	..	35,773	3,477
1972	121	375	496	5,154	193	3,398	414	9,159	9,655	..	30,642	2,491
1971	135	547	682	7,896	194	3,066	494	11,650	12,332	7	28,548	2,179

Source: Department of Statistics; prepared by New Zealand Forest Service.

Note—The basis for valuation is: imports, c.d.v.; exports, f.o.b.
*b.d.u.: bone dry unit; 1 b.d.u. = 1 000 kilograms of oven dry wood.

APPENDIX 19—continued

EXTERNAL TRADE OF NEW ZEALAND IN FOREST PRODUCTS—*continued*

(c) *Imports of Pulp and Paper*

Calendar Year	Wood Pulp	Fibreboard	Paper and Paperboard		
			Newsprint	Other Paper and Paperboard	Total
(1)	(2)	(3)	(4)	(5)	(6)
		(Quantity in tonnes)			
1975	4 458	6 833*	2 302	29 047	31 349
1974	6 109	861 934*	5 891	49 559	55 450
1973	15 010	4 224*	7 634	36 422	44 056
1972	12 340	6 317*	447	38 678	39 125
1971	14 627	2 415*	493	19 751	20 244
		(Value in $(000))			
1975	1,209	28	690	21,189	21,879
1974	1,310	224	1,562	27,131	28,693
1973	2,139	7	998	13,444	14,442
1972	1,637	10	74	11,320	11,394
1971	1,142	1	79	9,004	9,083

(d) *Exports of Pulp and Paper*

Calendar Year	Wood Pulp	Fibreboard	Paper and Paperboard		
			Newsprint	Other Paper and Paperboard	Total
(1)	(2)	(3)	(4)	(5)	(6)
		(Quantity in tonnes)			
1976	370 095	..	164 058	83 631	247 689
1975	335 468	533 165*	106 403	67 260	173 663
1974	274 386	544 816*	120 276	51 711	171 987
1973	203 670	1 663 610*	111 258	26 443	148 401
1972	118 756	2 315 329*	124 410	28 831	153 241
1971	100 454	2 109 549*	126 885	18 119	145 004
		(Value in $(000))			
1976	63,095	690	45,826	27,520	73,346
1975	49,212	394	23,400	20,754	44,154
1974	37,777	336	18,322	13,781	32,103
1973	19,449	921	15,041	7,130	22,174
1972	11,478	1,158	15,728	5,095	20,760
1971	9,765	1,038	16,018	3,697	19,715

*In square metres.

Source: Department of Statistics; prepared by the New Zealand Forest Service.

NOTE—(1) "Other Paper and Paperboard" excludes manufactures of paper and paperboard; values of "Other Paper and Paperboard" include items for which no quantities are given.
(2) Basis for valuation: imports, c.d.v.; exports, f.o.b.

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